FOREWORD

This pamphlet describes the records that are required to implement USACE's Materiel Maintenance Policies for personal property. It has been written and based on substantial collaboration between many operations and logistics team members representing activities throughout our command, implementing a consensus process. We gratefully acknowledge the efforts of all participants.

Our dedication to the proper use and care of our personal property is instrumental in the successful completion of our missions. This pamphlet offers a variety of maintenance procedures for the individuals entrusted with the care of our equipment. It was intentionally developed to allow the flexibility for each activity to tailor their procedures and still conform to our maintenance policy standards. All of our management team members must become familiar with the policies and procedures we use to acquire, employ, and maintain our property. Equally important, our management team must also direct and oversee the efforts that make proper use and care of our valuable and limited resources, a routine part of our daily responsibilities.

Any inquiries regarding this publication should be addressed to HQUSACE, CELD-MS, Washington, D.C. 20314-1000

FOR THE COMMANDER:

OTIS WILLIAMS
Colonel, Corps of Engineers
Chief of Staff

Note: New procedures must be implemented within six (6) months from the publication date.

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
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Maintenance of Supplies and Equipment
PROCEDURAL PAMPHLET
FOR
MATERIEL MAINTENANCE POLICIES

TABLE OF CONTENTS

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APPENDICES **Page**

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1-1. Purpose. In general, this pamphlet describes the minimum procedures that are required to manage and maintain personal property within USACE. Specifically, it describes the procedures that are needed to implement the USACE maintenance policies and responsibilities defined in ER 750-1-1, as they apply to personal property acquired with Civil and Military funds. Existing manual or automated maintenance management programs may be used to substitute for or replace any method outlined in this pamphlet, as long as pertinent data is captured. This pamphlet also describes the methods required to control and manage personal property and the maintenance program.

1-2. Applicability. This pamphlet applies to all self-propelled, towed, or stationary self-powered personal property, excluding equipment specified in ER 56-2-1 (Administrative Vehicle Management, Civil Works). At the minimum, all equipment with an acquisition value criterion of $5,000.00 or more, is subject to the full requirements and methods contained in this pamphlet. Individual equipment items that are used together and form a system valued at $5,000.00 or more are also subject. Equipment with an acquisition value criterion less than $5,000.00 is not subject to the full requirements and methods herein, but will be maintained in an operational mode.

1-3. References. (See list at Appendix A)

1-4. Distribution. Approved for public release, distribution is unlimited.

1-5. Methods. Methods will be established for the following:

a. Scheduling maintenance, and recording completed maintenance actions.

b. Tracking the condition, status, and operation of personal property.

c. Gathering maintenance information for special studies and projects.

d. Maintaining historical maintenance data.

e. Collecting special maintenance information.

1-6. Responsibilities.

a. Commander, USACE:

(1) Provides command broad guidance for the Materiel Maintenance Program.

(2) Emphasizes the importance of maintenance and ensures that all commanders are held accountable for the conduct of maintenance operations.

b. Director of Logistics, HQUSACE:

(1) Develops concepts, policies, doctrine, and plans for personal property maintenance.

(2) Develops and distributes implementing instructions and procedures to assist commanders in complying with maintenance regulations.

(3) Conducts periodic inspections and staff visits, as appropriate, to determine the adequacy of command maintenance operations, to document deficiencies, and to recommend corrections.

c. Each Activity Commander:

(1) Provides local guidance to their Materiel Maintenance Management Program (MMMP).

(2) Ensures that adequate resources are dedicated to the MMMP and that all maintenance operations in the command are properly supervised.

(3) Appoints a qualified maintenance officer in writing that will oversee the MMMP, as a primary duty.

d. Chief, Logistics Management Office:

(1) Implements HQUSACE guidance and standards and advises the USACE Commander of major changes necessary to improve maintenance policies in the Corps.

(2) Ensures compliance with materiel maintenance standards and the related logistics performance standards.

(3) Develops policies and procedures as necessary to implement the District MMMP.

(4) Assists supervisors in implementing MMMP policies and procedures.

(5) Ensures that equipment disposal inspections are completed.

e. Maintenance Officer: (**See Table 1-1**).

(1) Monitors the maintenance program and advises Chief of Logistics Management of

changes necessary to improve local maintenance policies and procedures.

(2) Ensures that materiel maintenance standards are being complied with.

(3) Assists local supervisors in implementing the policies and procedures for the materiel maintenance program.

(4) Is appointed in writing as the Test, Measurement, and Diagnostic Equipment (TMDE) Coordinator and is responsible for developing a TMDE program to ensure compliance with the maintenance plan, regulations, manuals, and bulletins so as to reinforce maintenance discipline. TMDE support activity assignments by USACE element, are listed in **Table 1-2.**

(5) Is appointed in writing as the Oil Analysis Program (OAP) Monitor, who will:

(a) Provide management guidance, technical supervision and assistance to activities affiliated with the division, district, etc.

(b) Ensure that all activities participate in an OAP program (Army OAP Laboratory assignments by USACE element are listed in **Table 1-3.**

(c) Recommend systems for inclusion in the OAP and sampling intervals for systems.

(6) Manages the activity's warranty program to include all matters related to warranty claim actions (WCA).

(7) Is required to conduct annual site visits and prepare written evaluations and reviews the Materiel Maintenance Program within the district. Annual evaluation will be sent through the Chief, LMO, to the activity commander.

(8) Develops and implements the district maintenance plan, performs annual reviews and posts changes as needed.

f. Maintenance Manager: (Refer to Table 1-1).

(1) Identifies maintenance requirements and ensures that all scheduled and unscheduled maintenance of all personal property is performed expeditiously and by the most economical means.

(2) Oversees the functions of Maintenance Coordinators within their activity.

(3) Prepares and implements the activity's maintenance sub-plans.

(4) Determines resources and personal property specific requirements.

(5) Monitors personal property performance and evaluates the maintenance program.

(6) Ensures all maintenance programs are executed.

g. Maintenance Coordinator: (Refer to Table 1-1)

(1) Ensures that maintenance data are maintained and transferred to permanent records.

(2) Is responsible for tracking and complying with warranty requirements.

(3) Is responsible for dispatching functions.

(4) Ensures that scheduled and unscheduled maintenance is performed.

(5) Is responsible for upward reporting requirements through maintenance channels.

(6) Is responsible for the maintenance of specific items of personal property or for groups of personal property.

(7) Receives Equipment Maintenance Checks and Services (EMCS) and determines if personal property is operational and safe for use.

(8) Maintains operator/usage records (equipment usage is covered in Chapter 9 and important information is also contained in **Tables 1-4 and 1-5**.

1-5. Explanation of Terms. Words with special meanings for users of this pamphlet are explained in the glossary.

1-6. Types of Records in this Pamphlet.

a. Operational records. Operational records provide the information necessary to plan, manage, and ensure optimum use of personal property. They are covered in Chapter 3 of this pamphlet.

b. Maintenance records. Maintenance records control maintenance schedules and services,

inspections, and repair workloads. These records are covered in Chapter 4 of this pamphlet.

c. Oil Analysis Program. Technical information, instructions, and operating procedures for non aeronautical personal property enrolled in the OAP are described in Chapter 5. Policies, objectives, and responsibilities of the OAP are prescribed in Chapter 3 of ER 750-1-1.

d. Equipment historical records. Historical records are permanent forms documenting the receipt, operation, maintenance, transfer, and disposal of individual items of personal property. Chapter 6 of this pamphlet covers historical records.

e. Watercraft Records. Records for floating craft are covered in Chapter 7 of this pamphlet.

1-7. Exceptions. Supplementation of this pamphlet is not authorized.

1-8. General Instructions.

a. Information about forms and records, samples, details about their use and how they are completed are found in Appendix B. Data required by the maintenance plan shall be captured on the sample forms or through other methods. Unless the specific instructions for sample forms say otherwise, the following rules apply:

(1) Forms may be overprinted when the information is repeated each time the form is used for a particular purpose.

(2) Use sample forms and illustrations only as guides and leave unnecessary entries blank.

(3) Disposition instructions are provided for sample forms. Forms may be retained beyond specified use periods when local management requirements or special situations dictate.

1-9. Form Requirements.

a. Forms and records provide a picture of the condition of equipment, its operation and needs. The ultimate purpose of this information is to ensure the equipment is safe and ready to perform its mission.

b. Operators, dispatchers, mechanics and supervisors have an equal stake in properly

maintaining the forms.

c. Forms and records will not be redone, merely for neatness. Only remake historical forms and records when the original is lost or so damaged that the information is no longer legible.

Table 1-1 Maintenance Responsibility Structure

Title	Job Description
Maintenance Officer	1. Monitors Maintenance Program
	2. Advise Chief of Logistics of Changes
	3. Assures that Materiel Maintenance Standards are Being Complied With.
	4. Assist Local Supervisors in Implementing Policies/Procedures for Materiel Maintenance Program
	5. Appointed in Writing as the Oil Analysis Program (OAP) Monitor, Who Will:
	(a) Provide Management Guidance, Technical Supervision/ Assistance to Activities Affiliated With Division/District etc.
	(b) Assure all Activities Participate in An OAP
	© Recommend Systems for Inclusion in OAP/ Sampling Intervals for System
	6. Appointed in Writing as TMDE Coordinator
	(a) Responsible to Develops TMDE Program Which Will:
	(b) Ensure Compliance with Maintenance Plan, Regulations, Manuals, and Bulletins to Reinforce Maintenance discipline
	7. Manage Activity's Warranty Program
	8. Conduct Annual Site Visits and Prepare Written Evaluations/ Reviews of Materiel Maintenance Program Within District
Maintenance Officer (Continued)	9. Develops and Implements the Maintenance Plan With Annual Reviews/Changes Posted
	10. Responsible for Equipment Usage Reports
**********	**********
Maintenance Manager	1. Assures Schedule/Unscheduled Maintenance of Personal

	Property is Performed Expeditiously
	2. Oversees Maintenance Coordinators Functions
	3. Identifies Maintenance Requirements
	4. Prepares and implements Activity's Maintenance Sub-plans
	5. Determines Resources/Personal Property Specific Requirements
	6. Monitors Personal Property Performance and Evaluate Maintenance Program
	7. Assures all Maintenance Programs are Executed
	8. Responsible for Collecting and Recording Cost of Parts, Labor and Contracts for Each Piece of Equipment
**********	**********
Maintenance Coordinator	1. Assures Maintenance Data are Maintained and Transferred to Permanent Record
	2. Responsible for Tracking/Complying with Warranty Requirements
	3. Responsible for Dispatching Functions
	4. Assures Schedule/Unscheduled Maintenance is Performed
	5. Responsible for Upward Reporting Requirements
	6. Responsible for The Maintenance of Specific Item(s) of Personal Property or Group of Personal Property
Maintenance Coordinator (Continued)	7. Receives Equipment Maintenance Checks and Services (EMCS) and Determines Safety of Personal Property
	8. Maintains Operator/Utilization Records
**********	**********
Operator	1. Process Upward Reporting as Required

	2. Reports Operating Irregularities to MC for Action
	3. Reports Repair Parts Used
	4. Responsible for Safe Operation of Personal Property
	5. Performs and Report EMCS
	6. Performs Operator Maintenance
**********	**********
Maintenance Activity	1. Perform Maintenance and Repairs
	2. Reports Condition of Personal Property
	3. Reports Parts and Labor
	4. Performs Equipment PMCS

Table 1-2 TMDE Support Activity **Assignments in USACE**

USACE Activity	USATA Support Activity
CEHNC-LM PO Box 1600 Huntsville, AL 35807-4301	Redstone Arsenal
CEMVD-LM P.O. Box 80 Vicksburg, MS 39181-0080	TSC Anniston
CEMVM-LO B-202 Clifford Davis Fed Bldg... Memphis, TN 38103-1894	TSC Pine Bluff
CEMVN-LM P.O. BOX 60267 New Orleans, LA 70160-0267	TSC Anniston
CEMVS-LM 1222 Spruce St. St. Louis, MO 63103-2833	TSC Fort Leonard Wood
CEMVK-LM 2101 N Frontage Rd. Vicksburg, MS 39181-5191	TSC Anniston
CENWD-LM P.O. Box 103 Downtown Station Omaha, NE 68101-0103	TSC Ft. Riley
CENWK-LM 700 Federal Bldg.. 601 E. 12th Street Rm. 648 Kansas City, MO 64106-2896	TSC Ft. Riley

CENWO-LM 215 North 17th Street Omaha, NE 68102-4978	TSC Ft. Riley
CENAE-LO 424 Trapelo Road Waltham, MA 02254-9149	TSC Ft. Devens
CENAD-LM 90 Church Street New York, NY 1007-2979	TSC Picatinny
CENAB-LO P.O. Box 1715 Baltimore, MD 21203-1715	TSC Aberdeen
CENAN-LM 26 Federal Plaza, Room 1873 New York, NY 10278-0090	TSC Picatinny
CENAO-LM 803 Front Street Norfolk, VA 23510-1096	TSC Ft. Eustis
CENAP-LM Wannamaker Bldg.. 100 Penn Square East Philadelphia, PA 19107-3390	TSC Ft. Dix
CELRD-LM 111 N. Canal Street Chicago, IL 60606-7205	TSC Ft. Sheridan
CELRB-LM 1776 Niagara Street Buffalo, NY 14207-3199	TSC Watervliet
CELRC-LM 111 N Canal Street Chicago, IL 60606-7206	TSC Ft. Sheridan
CELRE-LM	TSC Warren

P.O. Box 1027 Detroit, MI 48231-1027	
CENVR-LM P.O. Box 2004 Clock Tower Building Rock Island, IL 61204-2004	TSC Rock Island
CEMVP-LM Army Corps of Engr.. Center 190 Th Street E. St. Paul MN 55101-1638	TSC Ft. McCoy
CENWD-LM P.O. Box 2870 Portland, OR 97208-2870	TSC Ft. Lewis
CEPOA-LM P.O. Box 898 Anchorage, AK 99506-0898	TSC Ft. Greely
CENWP-LM P.O. Box 2946 Portland, OR 97208-2946	TSC Ft. Lewis
CENWS-LM P.O. Box 3755 Seattle, WA 98124-2255	TSC Ft. Lewis
CENWW-LM Army Corps of Engr.. Walla Walla, WA 99362-9265	TSC Ft. Lewis
CELRD-LM P.O. Box 1159 Cincinnati, OH 45201-1159	TSC Richmond
CELRH-LM 502 Eight Street Huntington, WV 25701-2070	TSC Richmond
CELRL-LM P.O. Box 59 Louisville, KY 40201-0059	TSC Ft. Knox

CELRN-LM P.O. Box 1070 Nashville, TN 37202-1070	TSC Ft. Campbell
CELRP-LM William S. Moorehead Fed Bldg.. 1000 Liberty Avenue Pittsburgh, PA 15222-4186	TSC Letter Kenny
CEPOD-LO Building 230 Ft. Shafter, HI 96858-5440	ATSD Hawaii
CEPOF-LO Far East Unit 15546 APO AP 96205-0610	ATSD Hawaii
CEPOJ-LO UASEDJ Unit 45010 APO AP 96343-0061	ASTD Japan
CESAD-LM 77 Forsythe St., SW., Rm. 313 Atlanta, GA 30335-6801	TSC Ft. Gillem
CESAC-LM P.O. Box 919 Charleston, SC 29402-0919	TSC Hunter Army Air Field
CESAJ-LM P.O. Box 4970 Jacksonville, FL 32232-0019	TSC Anniston
CESAM-LM P.O. Box 2288 Mobile, AL 36628-0001	TSC Anniston
CESAS-LM P.O. Box 889 Savannah, GA 31402-0889	TSC Hunter Army Air Field

CESAW-LM P.O. Box 1890 Wilmington, NC 28402-1890	TSC Ft. Bragg
CESPD-LM 630 Sansome Street, Room 720 San Francisco, CA 94111-2206	TSC Stockton
CESPL-LM P.O. Box 2711 Los Angeles, CA 90053-2325	TSC Los Alamitos
CESPK-LM 1225 J Street, Sacramento, CA 95814-2922	TSC Stockton
CESPN-LM 211 Main Street San Francisco, CA 94105-1905	TSC Stockton
CESWD-LO 1114 Commerce Street Room 413A Dallas, TX 75242-0216	TSC Ft. Sill
CESPA-LO P.O. Box 1580 Albuquerque, NM 87103-1580	TSC White Sands
CESWF-LO P.O. Box 17300 Ft. Worth, TX 76102-0300	TSC Ft. Sill
CESWG-LO P.O. Box 1229 Galveston, TX 77553-1229	TSC Corpus Christi
CESWL-LO P.O. Box 867 Little Rock, AR 72203-0867	TSC Pine Bluff
CESWT-LO P.O. Box 61	TSC McAlester

Tulsa, OK 74121-0061	
CETAC-LM P.O. Box 2250 Winchester, VA 22604-1450	TSC Letter Kenny
CETAE-LM UNIT 25727 APO AE 09242	74 Maintenance Branch
CETEC-IM-S BLDG.. 2592 Ft. Belvoir, VA 22060-5546	TSC Ft. Belvoir
CETEC-ES Casey Building, # 2594 Ft. Belvoir, VA 22060-5583	TSC Ft. Belvoir
CEWES-LM-Z 3909 Halls Ferry Rd. Vicksburg, MS 39181-6199	TSC Anniston
CECRL-LM 72 Lyme Road Hanover, NH 03755-1290	Ft. Devens
CECER-LM P.O. Box 9005 Champaign, IL 61826-9005	TSC Ft. Knox
CECPW 7701 Telegraph Rd Alexandria, VA 22310-3862	TSC Ft. Belvoir
CEWRC-LM Casey Building #2594 Ft. Belvoir, VA 22060-5586	TSC Ft. Belvoir
CEHEC-LM 7701 Telegraph Rd. Alexandria, VA 22310-3860	TSC Ft. Belvoir

Table 1-3 Oil Analysis Program Laboratory Assignments in USACE

Organization:	Phone:	Laboratory:
USAE Division, Mississippi Valley	Maintenance Officer (601) 634-7784	Ft. Polk, LA (FORSCOM)
USAE District, Memphis	Maintenance Officer (901) 544-3925	Ft. Campbell, KY (FORSCOM)
USAE District, New Orleans	Maintenance Officer (504) 862-1209	Ft. Polk, LA (FORSCOM)
USAE District, St. Louis	Maintenance Officer (314) 331-8017	Ft. Riley, KS (FORSCOM)
USAE District, Vicksburg	Maintenance Officer (601) 631-7486	Ft. Polk, LA (FORSCOM)
USAE District, Rock Island	Maintenance Officer (309) 794-5217	Ft. Campbell, KY (FORSCOM)
USAE District, St. Paul	Maintenance Officer (612) 290-5222	Ft. Riley, KS (FORSCOM)
USAE Division, Northwestern	Maintenance Officer (503) 808-3717	Ft. Lewis, WA (FORSCOM)
USAE District, Portland	Maintenance Officer (503) 808-4650	Ft. Lewis, WA (FORSCOM)
USAE District, Seattle	Maintenance Officer (206) 764-3724	Ft. Lewis, WA (FORSCOM)
USAE District, Walla Walla	Maintenance Officer (509) 527-7041	Ft. Lewis, WA (FORSCOM)
Missouri River Regional Headquarters	Maintenance Officer (402) 697-2444	Ft. Riley, KS (FORSCOM)
USAE District, Kansas City	Maintenance Officer (816) 426-3480	Ft. Riley, KS (FORSCOM)
USAE District, Omaha	Maintenance Officer (402) 221-3241	Ft. Riley, KS (FORSCOM)
USAE Division, North Atlantic	Maintenance Officer (212) 264-7464	Ft. Drum, NY (FORSCOM)
USAE District, Baltimore	Maintenance Officer (410) 962-4091	Ft. Eustis, VA (TRADOC)

USAE District, Norfolk	Maintenance Officer (757) 441-7800	Ft. Eustis, VA (TRADOC)
USAE District, New England	Maintenance Officer (617) 647-8794	Ft. Drum, NY (FORSCOM)
USAE District, New York	Maintenance Officer (212) 264-0222	Ft. Drum, NY (FORSCOM)
USAE District, Philadelphia	Maintenance Officer (215) 656-6808	Ft. Eustis, VA (TRADOC)
Great Lakes and Ohio River Division	Maintenance Officer (513) 684-6448	Ft. Knox, KY (TRADOC)
USAE District, Huntington	Maintenance Officer (304) 529-5296	Ft. Knox, KY (TRADOC)
USAE District, Louisville	Maintenance Officer (502) 582-5637	Ft. Knox, KY (TRADOC)
USAE District, Nashville	Maintenance Officer (Acting), (615) 736-5649	Ft. Campbell, KY (FORSCOM)
USAE District, Pittsburgh	Maintenance Officer (412) 395-7463	Ft. Eustis, VA (TRADOC)
Great Lakes Regional Headquarters	Maintenance Officer (312) 353-6400 ext. 1200	Ft. Knox, KY (TRADOC)
USAE District, Buffalo	Maintenance Officer (716) 879-4103	Ft. Drum, NY (FORSCOM)
USAE District, Chicago	Maintenance Officer (312) 353-6400 ext. 1200	Ft. Campbell, KY (FORSCOM)
USAE District, Detroit	Maintenance Officer (313) 226-5358	Ft. Knox, KY (TRADOC)
USAE Division, Pacific Ocean	Maintenance Officer (808) 438-9727	Pearl Harbor, HI (JOAP Lab)
USAE District, Alaska	Maintenance Officer (907) 753-2559	Ft. Richardson, AK (USARPAC)
USAE District, Far East	Maintenance Officer Comm-011-82-2-274-3779	Camp Stanley, Korea (USEIGHT)

USAE District, Japan	Maintenance Officer Comm-011-81-3117-63-3910	Camp Carroll, Korea (USEIGHT)
USAE Division, South Atlantic	Maintenance Officer (404) 331-4419	Hunter AAF, GA (FORSCOM)
USAE District, Jacksonville	Maintenance Officer (904) 232-2275	Hunter AAF, GA (FORSCOM)
USAE District, Mobile	Maintenance Officer (334) 441-5191	Ft. Benning, GA (TRADOC)
USAE District, Charleston	Maintenance Officer (803) 727-4352	Ft. Bragg, NC (FORSCOM)
USAE District, Savannah	Maintenance Officer (912) 652-5776	Hunter AAF, GA (FORSCOM)
USAE District, Wilmington	Maintenance Officer (910) 251-4643	Ft. Bragg, NC (FORSCOM)
USAE Division, South Pacific	Maintenance Officer (415) 977-8200	Ft. Lewis, WA (FORSCOM)
USAE District, Los Angeles	Maintenance Officer (213) 452-3910	Ft. Lewis, WA (FORSCOM)
USAE District, Albuquerque	Maintenance Officer (505) 342-3130	Ft. Bliss, TX (TRADOC)
USAE District, Sacramento	Maintenance Officer (916) 577-5334	Ft. Lewis, WA (FORSCOM)
USAE District, San Francisco	Maintenance Officer (415) 977-8635	Ft. Lewis, WA (FORSCOM)
USAE Division, Southwestern	Maintenance Officer (214) 767-2334	Ft. Sill, OK (TRADOC)
USAE District, Ft. Worth	Maintenance Officer (817) 978-2275	Corpus Christi Army Depot (DESCOM)
USAE District, Galveston	Maintenance Officer (409) 766-3838	Corpus Christi Army Depot (DESCOM)

USAE District, Little Rock	Maintenance Officer (501) 324-5650	Ft. Polk, LA (FORSCOM)
USAE District, Tulsa	Maintenance Officer	Ft. Sill, OK (TRADOC)

	(918) 669-7439	
US Army Engineer and Support Center, Huntsville	Maintenance Officer (205) 895-1680	Ft. Benning, GA (TRADOC)
Transatlantic Programs Center	Maintenance Officer (540) 665-3617	Ft. Eustis, VA (TRADOC)
Transatlantic Programs Center, Europe	Maintenance Officer Comm-011-49-611-816-2470	Mannheim Oil Lab, Germany (USAREUR)
US Army Topographic Engineering Center	Maintenance Officer (703) 428-9023	Ft. Eustis, VA (TRADOC)
Engineer Strategic Studies Center, ESSC	Maintenance Officer (703) 428-7331	Ft. Eustis, VA (TRADOC)
US Army Cold Regions Research and Engineering Laboratory	Maintenance Officer (603) 646-4324	Ft. Drum, NY (FORSCOM)
US Army Construction Engineering Research Laboratory	Maintenance Officer (217) 373-6799	Ft. Campbell, KY (FORSCOM)
USAE Waterways Experiment Station	Maintenance Officer 601) 634-2509	Ft. Polk, LA (FORSCOM)
USAE Center for Public Works	Maintenance Officer (703) 806-5622	Ft. Eustis, VA (TRADOC)
USAE Water Resources Support Center	Maintenance Officer (703) 428-7166	Ft. Eustis, VA (TRADOC)
USAE Humphreys Engineer Center	Maintenance Officer (703) 428-6549	Ft. Eustis, VA (TRADOC)

Table 1-4 Equipment Usage Tracking List for USACE

	Equipment Category Code	Nomenclature	Federal Supply Class
1	LE	Boat, Tow	1925
2	LE	Boat, Tug	1925
3	LG	Motor, Outboard, 100 HP and Larger	2010
4	LH	Crane, Barge Mtd	3950
5	LH	Derrick, Crane Barge	3950
6	NB	Distributor, Water, 1000 Gal &Above, Trk Mtd, Eng Driven	3825
7	NB	Mixer, Concrete, Trailer Mounted	3895
8	NB	Mixer, Concrete, Truck Mounted	3895
9	NC	Scraper, Earthmover, Self Propelled	3805
10	NC	Scraper, Earthmover ing, Towed	3805
11	ND	Tractor, Full Tracked, with Backhoe/Loader	2430
12	ND	Tractor, Full Tracked, with Bulldozer, High Speed	2430
13	ND	Tractor, Full Tracked, with Bulldozer, Low	2410

		Speed	
14	ND	Tractor, Wheeled, Industrial, with Bulldozer	2420
15	ND	Tractor, Wheeled, Industrial, with Backhoe/Loader	2420
16	ND	Tractor, Wheeled, Industrial, with Bulldozer	2420
17	NE	Grader, Road Motorized (All)	3805
18	NF	Crane, Crawler Mtd	3810
19	NF	Crane, Truck Mtd	3810
20	NF	Crane, Wheel Mtd	3810
21	NF	Crane Shovel, Crawler Mounted	3810
22	NF	Crane Shovel, Truck Mounted	3810
23	NF	Excavator, Multi-Purpose, Crawler Mounted	3805
24	NF	Excavator, Multi-Purpose, Truck Mtd	3805
25	NG	Loader , Scoop, Engine Driven, Full Tracked	3805
26	NG	Loader , Scoop, Eng Driven, Wheel Mtd	3805
27	NH	Roller, Motorized, Engine Driven	3895

28	NH	Roller, Vibratory, Self Propelled	3895
29	NJ	Drill, Machine, Truck Mounted	3820
30	NJ	Drill, Machine Truck Mounted	3820
31	NJ	Truck, Well Drill Support	3820
32	NN	Truck, Concrete Mixer, CCE	3895
33	NN	Truck, Dump, CCE, 20T	3805
34	NV	Auger, Earth, Skid Mtd, Engine Driven	3820
35	NV	Auger, Earth, Truck Mtd, Engine Driven	3820
36	NV	Compactor, Motorized (HS)	3805
37	NV	Ditching Machine, Engine Driven	3805
38	NV	Hammer, Pile Driven Self Powered, (All)	3895
39	NV	Sweeper, Rotary, Self Propelled	3825
40	PA	Crane Truck, Warehouse, Electric	3810
41	PA	Crane Truck, Warehouse, Engine Driven	3950

42	PB	Truck, Forklift, Electric, 4000, Lbs., and Above	3930
43	PC	Truck, Forklift, Gas Engine Driven, 4000 Lbs., and Above	3930
44	PE	Tractor, Wheeled, Warehouse, Electric	3930
45	PE	Tractor, Wheeled, Warehouse, Engine Driven	3930
46	PG	Truck, Forklift, Rough Terrain	3930
47	PI	Truck, Forklift, Diesel Engine Driven	3930
48	QB	Generator Set, Skid Mounted, 15 kW and Above	6115
49	QB	Generator Set, Trailer Mounted, 15 kW and Above	6115
50	QB	Generator Set, Truck Mounted, 15 kW and Above	6115
51	QB	Generator Set, Wheel Mounted, 15 kW and Above	6115
52	QC	Compressor, Skid Mounted, 125 CFM, 100 psi and Above	4310
53	QC	Compressor, Trailer Mounted, 125 CFM, 100 psi and Above	4310

54	QC	Compressor, Truck Mounted, 125 CFM, 100 psi and Above	4310
55	QC	Compressor, Wheel Mounted, 125 CFM, 100 psi and Above	4310
56	QD	Pump, Centrifugal, Water, Eng. Driven, Skid Mounted	4320
57	QD	Pump, Recip., Water, Engine Driven, Skid Mounted	4320
58	QG	Welding Machine, Skid Mounted	3431
59	QG	Welding Machine, Trailer Mounted	3431
60	QU	Truck, Fire Fighting Equipment Engine Driven (All)	4210
61	QU	Pump, Fire Fighting Equip., Trailer Mtd	4210
62	SY	Snow blower, Self Propelled	3825
63	SY	Snow blower, Truck Mounted	3825

Table 1-5 Equipment Usage Standards in USACE

ECC	FSC	Nomenclature	Usage Standard in % (Minimum)	Usage Standard in % (Objective)
LE	1925	Boat, Tow	45 Days	N / A
LE	1925	Boat, Tug	45 Days	N / A
LG	2010	Propelling Unit, Outboard, 100 HP and Larger	45 Days	N / A
LH	3950	Crane, Barge Mounted	45 Days	N / A
LH	3950	Derrick, Crane Barge	45 Days	N / A
Miscellaneous		Capitalized equipment not listed in this table (see ER 37-2-10, Chapter 1)	45 Days	N / A (Provisions of this exception apply ONLY to the minimum standard, NOT data collection.
NB	3825	Distributor, Water, 1000 Gal and Above	10	25
NB	3895	Mixer, Concrete, Trailer Mounted	10	25
NB	3895	Mixer, Concrete, Truck Mounted	10	25.
NC	3805	Scraper, Earthmoving, Self Propelled	15	30
NC	3805	Scraper, Earthmoving, Towed	15	30
ND	2430	Tractor, Full Tracked, with Backhoe/Loader	20	40
ND	2430	Tractor, Full Tracked, w/ Bulldozer, High Speed	20	40
ND	2430	Full Tracked, with Bulldozer, Low Speed	20	40
ND	2420	Tractor, Wheeled, Industrial, With Bulldozer	20	40
ND	2420	Tractor, Wheeled, with Backhoe/Loader	20	40

ND	2420	Tractor, Wheeled W/Backhoe, W/Loader	20	40
NE	3805	Grader, Road Motorized	15	30
NF	3810	Crane, Crawler Mounted	15	30
NF	3810	Crane, Truck Mounted	15	30
NF	3810	Crane, Wheel Mounted	15	30
NF	3810	Crane Shovel, Crawler Mtd	15	30
NF	3810	Crane Shovel, Truck Mounted	15	30
NF	3805	Excavator, Multi-Purpose, Crawler Mounted	15	30
NF	3895	Excavator, Multi-Purpose, Truck Mounted	15	30
NG	3895	Loader, Scoop, Engine Driven, Full Tracked	15	30
NG	3820	Loader, Scoop, Engine Driven, Wheel Mounted	15	30
NH	3820	Roller, Motorized, Engine Driven	10	25
NH	3820	Roller, Vibratory, Self Propelled	10	25
NJ	3820	Drill, Truck Mounted	20	30
NJ	3820	Drill, Pneumatic Drifter, Crawler Mtd	20	30
NJ	3820	Truck, Well Drill Support	20	30
NN	3895	Truck, Concrete Mixer, CCE	10	25
NN	3805	Truck, Dump, CCE, 20T	20	40
NV	3820	Auger, Earth, Skid Mounted, Engine	10	25
NV	3820	Auger, Earth, TRK Mounted	10	25

NV	3805	Compactor, Motorized	10	25
NV	3805	Ditching Machine, Engine Driven	10	25
NV	3895	Hammer, Pile Driven, Self Powered, (All	15	25
NV	3825	Sweeper, Rotary, Self Propelled	10	25
PA	3930	Crane Truck, Warehouse, Electric	10	35
PA	3930	Crane Truck, Warehouse, Engine Driven	20	35
PB	3930	Forklift, Electric, 4000 Lbs. and Above	15	25
PB	3930	Truck, Forklift, Gas Engine Driven, 4000 Lbs. and Above	25	50
PE	3930	Tractor, Wheeled, Warehouse, Electric	25	50
PE	3930	Tractor, Wheeled Warehouse, Engine Driven	25	50
PG	3930	Truck, Forklift-Rough Terrain	25	50
PI	3930	Truck, Forklift, Diesel Engine Driven	25	50
QB	6115	Generator Set, Skid Mounted, 15 KW & Above	20	40
QB	6115	Generator Set, Trailer Mounted, 15 KW & Above	20	40
QB	6115	Generator Set, Truck Mounted, 15 KW & Above	20	40
QB	6115	Generator Set, Wheel Mounted, 15 KW & Above	20	40
QC	4310	Compressor, Skid Mounted, 125 CFM, 100 psi and Above	15	30

QC	4310	Compressor, Trailer Mounted, 125 CFM, 100 psi and Above	15	30
QC	4310	Compressor, Truck Mounted, 125 CFM, 100 psi and Above	15	30
QC	4310	Compressor, Wheel Mounted, 125 CFM, 100 psi and Above	15	30
QD	4320	Pump, Centrifugal, Water, Engine Driven, Skid Mounted	10	20
QD	4320	Pump, Reciprocating, Water, Engine Driven, Skid Mounted	10	20
QG	3431	Welding Machine, Skid Mounted	20	40
QG	3431	Welding Machine, Trailer Mounted	20	40
QU	4210	Truck, Fire Fighting Equipment Engine Driven	10	20
QU	4210	Pump, Fire Fighting, Trailer Mounted	10	20
SY	3825	Snow-blower, Self propelled	10	20
SY	3825	Snowplow Truck Mounted	10	20

CHAPTER 2

MAINTENANCE PLAN

2-1. Purpose. The Maintenance Plan formally describes the methods an activity uses to perform its maintenance on personal property. The maintenance plan may be written so as to provide flexibility at district level, and still ensure conformance with the objectives of ER 750-1-1.

2-2. Applicability. A maintenance plan and sub-plans should be written in enough detail to give recently assigned personnel a firm grasp of how maintenance is to be accomplished in the activity.

a. Maintenance plans within USACE may differ with organizational structures and missions. Even so, the basic maintenance plan structure should be uniform throughout USACE.

b. A maintenance plan must be thorough and concise to be of any practical value.

c. Maintenance personnel at all levels must be familiar with the plan and the plan must be followed by all personnel.

d. All activities that perform maintenance are required to have a Maintenance Plan in accordance with ER 750-1-1.

2-3. General Information. As a minimum, the following areas of the Maintenance Plan should be addressed in detail:

a. Maintenance related duties and responsibilities for key activity personnel.

b. Procedures to be followed by personnel during scheduled operator level Preventive Maintenance Checks and Services (PMCS) periods.

c. Procedures to be followed by all personnel that have a role in activity level PMCS. (These are scheduled services).

d. Procedures used to check out (dispatch) personal property in the activity.

e. Procedures required to obtain a government equipment operator's license.

f. Tool accountability and control procedures.

g. Quality control procedures for maintenance actions and dispatching personal property.

h. Calibrations of test, measurement, and diagnostic equipment (TMDE) and tools.

I. Requirements of the Oil Analysis Program (OAP).

j. Environmental considerations that include proper procedures for handling and disposing of hazardous chemicals.

k. Safety precautions and guidance associated with equipment maintenance.

l. Publications.

m. Repair Parts and shop security procedures and policy .

n. Sub-plans, when needed for activity operational elements, will be included in an appendix to the activity's maintenance plan.

o. A Consolidated Equipment List, or a reference to where this information can be found will be included in an appendix to the activity's the maintenance plan.`

CHAPTER 3

OPERATIONAL RECORDS

3-1. General**.** This chapter describes the maintenance plan requirements for equipment operations. Maintenance plans that meet these requirements satisfy ER 750-1-1.

3-2. Equipment Operation**.**

a. Equipment usage. In order to facilitate decision making related to maintenance and life cycle property management, and to properly allocate operating costs, each district shall describe in its maintenance plan a method for tracking personal property usage. Use of ENG Form 3662 is one means of satisfying this requirement (See Appendix B, Figure B-3).

b. Equipment control. The activity maintenance plan shall describe a method to identify the responsible party and the location of the personal property. Use of DA Form 2401 is one means of satisfying this requirement (See example in Figure B-1.

c. Checkout procedures. The activity maintenance plan shall describe the method to inspect and ensure personal property is ready for service, to identify faults found, and to inform the maintenance coordinator of inspection results. Use of DA Form 2404 is one means of satisfying the requirement (See example in Appendix B, Figure B-6).

3-3. Equipment Record Folders**.**

a. An equipment record folder will be maintained for each item of personal property managed in accordance with the maintenance plan. Use of the Army Equipment Record Folder (**National Stock Number, 7510-00-889-3494**), is one means of satisfying the requirement.

b. The equipment record folder should be available each time an item of personal property is operated and should contain the necessary forms required during operation, as specified in the maintenance plan.

c. The folder shall contain the following items:

(1) Preventive maintenance checks and services checklist.

(2) Accident report forms (using SF 91 and DD Form 518 is one way to satisfy this requirement). Please refer to Appendix B, Figure B-15 and Figure B-16.

(3) Warranty information, if applicable.

(4) An inspection report (for example, DA Form 2404, Appendix B, Figure B-6).

(5) Usage record (for example, ENG Form 3662, Appendix B, Figure B-3).

3-4. Equipment Identification Cards (EIC)

a. The EIC may be used to tie an equipment record folder to an item of personal property.

b. The EIC is located on the outside of each equipment record folder. The information on the card is used to identify the personal property and may be used to keep track of services due.

c. The district maintenance plan will identify the EIC for local use, but DA Form 5823 is suggested (See Appendix B, Figure. B-13**)**. The EIC shall contain the following information:

(1) Name of the Maintenance Coordinator.

(2) Bar code number.

(3) Administrative number assigned locally for property identification or license tag number.

(4) Make and model.

(5) Serial number.

d. The maintenance plan may also specify recording the following information on the EIC:

(1) Next scheduled service and (or) lube date and the hours or miles when due (pencil entry).

(2) The date or hours the next OAP sample is due (pencil entry).

3-5. Equipment Lists**.**

a. Purpose. To assist Maintenance Coordinators in managing and maintaining their personal property and to help identify personal property for temporary reassignment during emergencies.

b. The equipment list will be maintained by all Maintenance Coordinators. Maintenance Officers will also arrange to have their own access to a consolidated list. The activity's property book records is one source for this list. The consolidated list shall contain these items:

(1) Equipment bar code number.

(2) Equipment administrative number or license tag number.

(3) Equipment description.

(4) Name or position of the Maintenance Coordinator responsible for each item of personal property.

(5) Equipment location and organizational code, if applicable.

CHAPTER 4

MAINTENANCE RECORDS

4-1. General.

a. This chapter provides examples of maintenance forms. The information in this chapter is only provided for those that chose to use it.

b. The forms in this chapter help in scheduling, performing, recording, and managing maintenance actions on personal property.

c. The forms record the result of inspections, tests, and completed maintenance actions. They link related supply and maintenance actions, and also show results of diagnostic checks.

4-2. DA Form 2404, Equipment Inspection/Maintenance Worksheet (Figure B-6 through B-9).

a. Purpose. DA Form 2404 has two major purposes. This form is the central record for managing and controlling maintenance as follows:

(1) It is a record of faults found during an inspection. Faults to record include those found during PMCS, maintenance activity inspections, diagnostic checks, and spot checks.

(2) It shows faults and repairs required to restore damaged property and may serve as an Estimated Cost of Damages (ECOD).

b. Use. As stated, the DA Form 2404 is used by personnel performing inspections, maintenance services, diagnostic checks, technical evaluations, and marine condition surveys on watercraft.

(1) It may be used to inspect an entire equipment system or all its components and (or) subsystems that join to make up one equipment system. For example, a truck mounted crane may use one form for the crane and one for the carrier.

(2) A single form may be used to inspect several like items of personal property.

(3) This form can be used as a temporary record of required and completed maintenance. In this case show needed services until they are transferred to DD Form 314 (Figure B-2). When property is inoperable, file a 2404 in the property's record folder to show the cause for this status.

(4) Operators may used this form to list problems that are fixed by replacing parts and those

the operator is unable to repair.

(5) Activity maintenance personnel may use this form during periodic services to list faults found and repair actions taken to fix them. When used to inspect several like items, the DA Form 2404 will list all deficiencies, shortcomings, and corrective action taken.

(6) This may be used to record actions taken by maintenance personnel, to include documenting repair parts ordered and recording maintenance that is deferred until the next scheduled service.

(7) It may be used on initial inspections by support or contract maintenance shops to list faults. The initial inspection should be attached to the work order that will be given to the mechanic. The DA Form 2404 will be used as the worksheet for correcting faults found and reporting activity level faults not repaired. Results of maintenance actions will be entered on the work order. For contract maintenance policy, see ER 750-1-1, paragraph 1-2.

(8) It may also be used on final inspections by support or contract maintenance shops to list faults found. Attach the final inspection to work order that will be given to the mechanic that will correct final inspection faults.

c. General Instructions.

(1) The way some blocks and columns on the DA Form 2404 are filled in may vary with use. Make sure to read the instructions that apply to your circumstances. When you need more than one DA Form 2404 for inspection or service, print page number in the right side of the form's title block.

(2) Information on the form should be current, correct, and easily understood by all.

(3) A form used for PMCS on an item will be kept in the property's record folder until all actions are completed or no longer needed, or until a fault is found. (See Figure B-6).

(4) Parts on order or actions pending under anticipated not mission capable (ANMC) conditions may go on the inspection record with a diagonal status symbol.

d. Disposition.

(1) As mentioned, the DA Form 2404 will be kept in the equipment record folder or in a protective cover until it is completed. If faults are found during operator PMCS, the form will be forwarded to the Maintenance Coordinator. The form is kept until uncorrected faults are moved

to other forms, or until all faults are fixed and the required data transferred to historical records.

(a) Maintenance section leaders will review the DA Form 2404 prior to destruction to ensure all corrective actions have been completed.

(b) Faults that must be deferred or that cannot be fixed until a part is received, should be reflected on DA Form 2404, showing the requisition number as action taken.

(c) Transfer faults that must be fixed at higher echelons to a work order and attach DA Form 2404.

(d) Status symbol "X" faults can go on DA Form 2404. When there is a NMC deficiency on DA Form 2404, keep it until the deficiency has been repaired. This includes the form on equipment sent to support maintenance. The form will be kept in the equipment record folder (or some other local method) so that this personal property is not dispatched.

(2) The DA Form 2404 used for scheduled services will be kept on file for quality control until the next service is performed. All uncorrected faults will be moved to a new DA Form 2404 or work order and services will be recorded on the DD Form 314. Forms carrying an "X" status will be kept until faults are corrected.

(3) A form listing a fault that makes personal property inoperable, is kept until the item is repaired and fully operational. Record non-operational time on the reverse side of DD Form 314.

(4) Keep DA Forms 2404 that shows periodic service on personal property that does not have historical records or a DD Form 314. Destroy the earlier form only after later periodic service is done. Open faults at that time will go on the new DA Form 2404.

(5) When this form is used to evaluate or technically inspect property, the form will stay with the item until all maintenance is performed or the item is disposed of. A copy of the technical inspection will go with an item sent to support maintenance or depot for repair or overhaul.

(6) DA Form 2404 used for estimated cost of damage (ECOD) is handled as follows:

(a) Two (2) copies will be attached to copy four (4) of the work order that requested the ECOD. One copy will be returned with the work order that requests repair of the damage.

(b) File the third copy with copy five (5) of the work order, at the supporting activity.

CHAPTER 5

OIL ANALYSIS PROGRAM (OAP)

5-1. General**.** Phase I personal property is the military equipment defined in DA PAM 738-750, Chapter 4, and is subject to the Army OAP. This publication also outlines sampling standards for Phase I items.

a. Phase II equipment is to be enrolled in the Army OAP or a civilian program. Phase II sampling standards will be established in the maintenance plan.

b. On watercraft, auxiliary engines are those that are not used for propulsion.

c. Gasoline engines and manual transmissions may **not** be enrolled in the AOAP.

d. Automatic transmissions and hydraulics can **only** be enrolled in the AOAP if the personal property's engine is also enrolled.

5-2. Phase II Equipment**.** Property in this category must meet one of the following criteria:

a. A diesel engine that has an oil capacity of 5 gallons or more.

b. An automatic transmission or gearbox, when coupled with (a) above.

c. Hydraulic system over 5 gallons (excluding brakes) when coupled with (a) above.

d. All watercraft engines, main and auxiliary, meeting the criteria in (a) above.

5-3. Phase III Equipment**.** Real property that meets the criteria in Phase II above, may also be enrolled in the Oil Analysis Program. However, enrollment is not mandatory. Examples are:

a. Pumping Station (Diesel Engines)
b. Hydropower (Diesel Engines)
c. Dredges
d. Mooring Barges

CHAPTER 6

EQUIPMENT HISTORICAL RECORDS

6-1. Objectives.

a. Historical records are permanent and are maintained on personal property to track it's maintenance history and to show the item's life cycle operational and non operational history.

b. Historical records show trends and data that may used in gauging the economic feasibility of repairing an item versus acquiring a replacement.

c. These records should be consolidated and securely stored in a manner that helps prevents their destruction, damage, or being misplaced.

d. Historical records provide managers valuable information on personal property usage, gains, losses, transfers, modifications, and on the OAP.

e. The only reason that justifies remaking a replacement historical form, is when the record has been lost or damaged so that the data is no longer legible.

f. Historical records will are to be filled out in ink or typewritten, unless specifically stated otherwise in instructions for the form.

6-2. Contents.

a. A maintenance history jacket file should be maintained for each equipment item or equipment system, as appropriate.

b. The jacket file should contain such items as maintenance forms, purchase documentation, applicable work orders, and vendor service reports and invoices.

CHAPTER 7

WATERCRAFT MAINTENANCE

7-1. Maintenance of Watercraft and Amphibians.

a. This chapter gives instructions that are specific to maintenance of USACE watercraft.

(1) All watercraft are divided into the following three classes:

(a) Class A watercraft are self-propelled and are at least 65 feet long.

(b) Class B watercraft are self-propelled and are less than 65 feet.

(c) Class C watercraft include all floating property that is not self-propelled. Class C watercraft are further divided into two classes:

(1) Class C-1 includes those having berthing facilities and, or machinery on board.

(2) Class C-2 covers the remaining craft that have neither facilities or machinery on board.

7-2. Objective. The objective of watercraft maintenance is to promote fully capable watercraft that are safe, reliable and seaworthy.

a. In order to accomplish these objectives, maintenance tasks are distinctly organized so that some are designated for accomplishment at wholesale level, while others are assigned to retail. maintenance activities. The two categories of tasks are defined in ER 750-1-1.

b. Actual maintenance tasks to be performed are listed in applicable maintenance manuals.

7-3. General Maintenance Policies.

a. Emergency repairs. When emergency watercraft repairs are required, but would be more appropriate for accomplishment in dry dock, the required maintenance will be considered a wholesale effort. When this condition exists, perform only those repairs required to correct the emergency. When wholesale repairs are possible, the property must be removed from operation, and then thoroughly repaired in dry dock, before being placed back in full time service.

b. There are times when a watercraft maintenance problem will develop while deployed on an operational mission and normal corrective action is not possible. When this happens, the vessel master should evaluate the situation, and decide on the best course of action consistent with safety, the welfare of the crew and vessel, and mission accomplishment.

c. On-Condition Cycle Maintenance (OCCM). All watercraft will undergo OCCM in accordance with the intervals established in Table 4-1 of ER 750-1-1. In freshwater cases, the dry dock schedule may be extended, when a waiver and justification is submitted to CECW-O for approval. At a minimum, the following will be performed:

(1) interior and exterior inspection of the hull to the deep load waterline, and

(2) ultrasonic testing of the hull to the deep load waterline.

d. Maintenance. The scope of work to be accomplished during OCCM will vary depending on the condition of the watercraft, the vessel class, resource limitations and other factors. As a minimum, the following maintenance and repair actions will be accomplished during OCCM when indicated during the inspection.

(1) Bottom cleaning and painting up to the deep load waterline.

(2) All repairs below the deep load waterline that are identified during the dry-dock inspection.

(3) All other maintenance and (or) repairs identified by the marine or ship surveyor that are required to effect a permanent change in the watercraft's condition.

e. Maintenance Reporting. Forms and records on watercraft and amphibians will be completed as specified in the maintenance plan, DA Pam 738-750, TB 55-1900-205-24, and TB 55-1900-205-45/1.

f. Dry Dock Schedules. Dry dock schedules for fresh water craft may be extended beyond the intervals established in Table 4-1 of ER 750-1-1, when both of the following conditions are met:

(1) Inspections are performed on a systematic basis and supports an extended schedule.

(2) Test data, such as hull ultrasonic tests, support extending intervals.

CHAPTER 8

TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE)

8-1. Purpose.

a. This chapter explains the requirements necessary to manage and maintain calibration and repair support for Test, Measurement, and Diagnostic Equipment (TMDE). It is intended to provide general guidance.

b. The following references provide general guidelines to personnel involved in the TMDE program. They explain how the program works, what is required to make it work, and how to ensure that calibration of applicable personal property is successfully and effectively accomplished.

(1) AR 750-43, Army TMDE Program.

(2) TB 750-25, Army TMDE Calibration and Repair Support (CRS) Program.

(3) TB 43-180, Calibration and Repair Requirements for the Maintenance of Army Materiel.

8-2. Applicability. This chapter is applicable to all Corps of Engineer personnel that are responsible to ensure that CRS is provided for the TMDE used in USACE. CRS is a vital link in certifying the accuracy of the personal property used by Corps workers.

8-3. General Information.

a. Maintenance managers should identify all TMDE that requires CRS and should arrange for the appropriate TMDE Support Activity to provide this service on property that is not supported at activity level. **Table 1-2** identifies these support providers, assigned to the U.S. Army TMDE Activity (USATA).

b. Repair support will normally be based on the concept that repairs should be performed by the **Table 1-2** element, listed as being responsible for CRS.

CHAPTER 9

EQUIPMENT MANAGEMENT

9-1. Personal Property Usage (Refer to Tables 1-4 and 1-5**).** Usage standards serve as a yardstick that is valuable in measuring how effective we are in getting our money's worth from the resources we invest in equipment. Obviously, we want to get the most usage at the lowest possible cost, while at the same time we are adequately staffed and equipped to complete all assigned missions. Recording usage data and comparing our results with established corporate or industry standards, gives our managers insight on ways we can improve our productivity and efficiency. Historical property usage data allow us to make informed management decisions.

a. Minimum standard in days. Floating plant property identified in ER/EP 1130-2-500, will be tracked in USACE, to determine if it meets the standard of 45 days minimum annual use. This rule will also apply to all capitalized (in financial records) property that does not directly, indirectly or logically fall into any of the other property categories listed in Table 1-5. The miscellaneous category was created to ensure all applicable property will have an established standard as a usage goal to attain.

b. Usage standards measured in percentages. Personal property not identified in ER 1130-2-500, but is included in the Equipment Usage Tracking List, **Table 1-4**, should have usage tracked, recorded and the usage history compared to the usage standard percentages listed in **Table 1-5**, to determine if our equipment falls short, meets, or exceeds the applicable standard.

c. Exceptions. Property that meets the criteria in Appendix H, is exempt from usage tracking requirements. These exceptions are also listed in Chapter 3, Section IV, of ER 700-1-1.

9-2. Basis for Computations. Usage standards are generally expressed in terms of hours, days, or time used. The computations may be based on any consecutive twelve-months period and are calculated as follows:

a. Workweek. Consist of a 40-hour workweek of four 10-hour days or five 8-hour days, less Federal holiday. In other words, deduct 8 hours for each holiday in the reporting period.

b. Operational hours. The base figures of 168 hours per month or 2016 hours per year are used, less the non operation hours the equipment is in maintenance.

c. Operational days. The base figure is the total workdays in a year less the days in maintenance. A year has 251 workdays (365 minus 104 weekend days and 10 holidays = 251 days). Each month, subtract weekend days, holidays, and days in maintenance, from total days.

d. Other basis. A base figure may be developed locally for items that have usage expressed in terms other than the above, for example, rounds fired, experiments conducted or miles of operation.

9-3. Computing Use Percentages**.** Use percentages are computed as shown below. Workweek percentages are computed as shown above in paragraph 9-2a . Computerized programs may use 2000 miles or 168 hours per month as appropriate, for prime shift periods. Hours in excess of this amount will be allotted to extra shift operations.

a. Determine the usage on equipment that is designated by USACE for tracking, using one of the following formulas, as applicable:

(1) To compute the use percentage for personal property with miles as the basis, multiply the total miles used during the annual period by 100 and divide the product by the objective mileage.

(2) To compute the monthly use percentage for personal property with operational hours as the basis, multiply the total hours used in a month by 100 and divide the product by operational hours.

(3) To compute the annual use percentage for personal property with operational hours as the basis, multiply the total hours used in a year by 100 and divide the product by the number of operational hours in the annual period. Another method is to find the yearly average by adding the monthly usage percentage for 12 consecutive months and divides the sum by 12.

(4) To compute the monthly use percentage for personal property with operational days as the basis, multiply the number of days the personal property is operated per month by 100 and divide the product by the number of operational days in the month.

(5) To compute the annual use percentage for personal property with operational days as the basis, multiply the number of days the personal property is operated per year by 100 and divide the product by the number of operational days in the annual period.

(6) Each month, usage data should be collected and recorded for each item of personal property operated during the month, that meets the USACE criteria for tracking. ENG Form 3662 will be used for this purpose. The data should be retained for future use in making equipment management decisions. ER 700-1-1, paragraph 3-26, explains a method for consolidating monthly and quarterly usage data. An automation system may be used to capture this data if available.

b. Compute the usage percentages for other personal property by locally devised formulas when days, hours, or miles are not an appropriate basis for usage. Show local formulas in the periodic personal property usage and availability data reports, described in paragraph 3-26, of ER 700-1-1.

9-4. Recording Maintenance Costs for Parts and Labor. Chapter 5, of ER 750-1-1 explains the importance of collecting, recording, and using historical maintenance cost information as part of an equipment management program. USACE activities will document maintenance costs using DA Form 2409, Equipment Maintenance Log. Section B, Maintenance Inspection Record, pertains to preventive maintenance (PM) costs and Section C, Repair and Cost Record, is used for repair costs. In each case, record entries for total parts, total labor, and for the sum these two categories. Section D, will not be used in USACE.

9-5. Equipment Operational Rates. Equipment Operational Rates show the relationship between up time and down time in percentages. This numerical relationship is also referred to as operational availability and DoD has set equipment readiness goals or standards for Defense activities to attain. Groups of personal property in USACE that have been designated as readiness significant are listed below.

a. In general terms, most USACE equipment may be grouped into categories as follows: Construction and Engineering, Material Handling, Support, and Watercraft. The following types of equipment will be tracked for operational rates:

(1) Construction Equipment

(2) Special Purpose Equipment

(3) Material Handling Equipment

(4) Watercraft/Amphibious

(5) Support Equipment - Generators

(6) Support Equipment - Air Compressors
(7) Support Equipment - Pumps

(8) Support Equipment - Well Drillers

b. Some end items may have subsystems (components) that affect the overall capability of the item. When determining if the end item is mission capable (green), consider the effect that a

non operational component would have on the ability of the end item to complete its assigned mission. If the end item cannot complete the assigned mission due to a component failure, then the end item should be reported as not mission capable (red). If the component failure does not interfere with mission completion, the end item is considered mission capable (green).

c. Operational Criteria. The command's goal is to achieve equipment operational readiness rates that are 85 per cent or higher. The following definitions are provided for your use:

(1) Status Green refers to operational rates that are 85 per cent or higher.

(2) Status Amber refers to rates that range between 75 and 84 per cent (inclusive).

(3) Status Red refers to rates that are 74 per cent or lower.

(4) Reporting Periods:

(a) 1st Qtr - 1 Oct. - 31 Dec. = 92 possible days.

(b) 2nd Qtr - 1 Jan. - 31 Mar. = 90 possible days. (Add one day for a leap year)

(c) 3rd Qtr - 1 Apr. - 30 Jun. = 91 possible days.

(e) 4th Qtr - 1 Jul. - 30 Sep. = 92 possible days.

d. Equipment On-hand Quantity: The total quantity for each reportable item shown in **Table 1-4**, that the property book reflects as on-hand in the activity, on the last day of the reporting period.

e. Possible Days: The total number of days the equipment was on hand during the reporting period (i.e., 1 item = 92 days, 2 items' = 184 days in the 1st Qtr). Count from the property book date of receipt to the end of the reporting period, to find possible days for recently received property.

f. Non available Days: The number of days the personal property was not able to perform its intended mission. If the property is not mission capable at the end of the normal work day, it is considered non available the entire day. If the property is repaired prior to the end of the normal work day, it is considered available for the entire day.

g. Available Days: The total possible days minus the Non available days.

h. Operational Rate: The percentage of available days based on the possible days. Formula: Total available days divided by the total possible days, multiplied by 100 equals the operational rate, expressed as a percentage. Example: $\frac{\text{Available Days (100)}}{\text{Possible Days}} = \text{Operational Rate}$

APPENDIX A

References (Required Publications)

AR	25-400-2	Modern Army Record Keeping System (MARKS)
DA PAM	738-750	Maintenance Management Update
TB	55-1900-205-24	Watercraft Information and Reporting Systems
TB	55-1900-205-41/1.	Guide to Army Watercraft Survey Inspection
TB	750-651	Use of Antifreeze Solutions
ER	56-2-1	Administrative Vehicle Management
ER	700-1-1	USACE Supply Policies and Procedures
ER	750-1-1	Materiel Maintenance Policies
ER	1130-2-500	Project Operation (Work Management Policy)
EP	1130-2-500	Project Operation (Work Management Guidance and Procedure)

RELATED PUBLICATIONS

AR	385-10	The Army Safety Program
AR	750-43	Test, Measurement And Diagnostic Equipment
EM	385-1-1	U.S. Army Corps of Engineers Safety and Health Manual
FM	21-305	Manual for Wheel Vehicle Driver
TM	9-243	Use and Care of Hand Tools
TM	9-6140-200-14	Battery Maintenance
TB	43-180	Calibrations and Repair Requirements of Army Materiel
TB	750-25	Maintenance of Supplies and Equipment: Army Test, Measurement, and Diagnostic

APPENDIX B

SAMPLES FORMS (and Instructions)

DA Form 2401	Organizational Control Record for Equipment
DD Form 314	Preventive Maintenance Schedule and Record
ENG Form 3662	Administrative Vehicle Operational Record
DA Form 2408-9	Equipment Control Record
DA Form 2409	Equipment Maintenance Log: Consolidated
DA Form 2404	Equipment Inspection/Maintenance Worksheet
DD Form 2026	Oil analysis Request
DA Form 3254-R	Oil Analysis Recommendation and Feedback
DA Form 2408-20	Oil Analysis Log
DA Form 5823	Equipment Identification Card
DA Form 2407	Maintenance Request
SF 91	Motor Vehicle Accident Report
DD Form 518	Accident Identification Card

Instructions for completing DA Form 2401, Organizational Control Record for Equipment

(Completion instruction are listed by block or column number or title (See sample, Figure B-1).

Date and Page No. Self explanatory.

Dispatcher. Signature of the dispatcher.

(a) Official User. Print the name of the person or activity authorized to use the equipment.

(b) Reporting Point. Enter equipment location at the beginning of the usage cycle.

(c) Phone Ext. Number. Enter a phone number for a supervisor at the using activity.

(d), (e) and (f). Self explanatory.

(g) Unit Identification Number. Enter vehicle administrative number or license plate number.

(h) Type of Equipment. Enter type or model of equipment.

(I) Registration Number. Enter bar code number of the equipment.

(j) Operator's Name and Grade, . Self explanatory.

(k) and (l). Self explanatory.

(m) Remarks: Enter remarks, such as an extended usage cycle, date equipment returned or towed equipment with a prime mover.

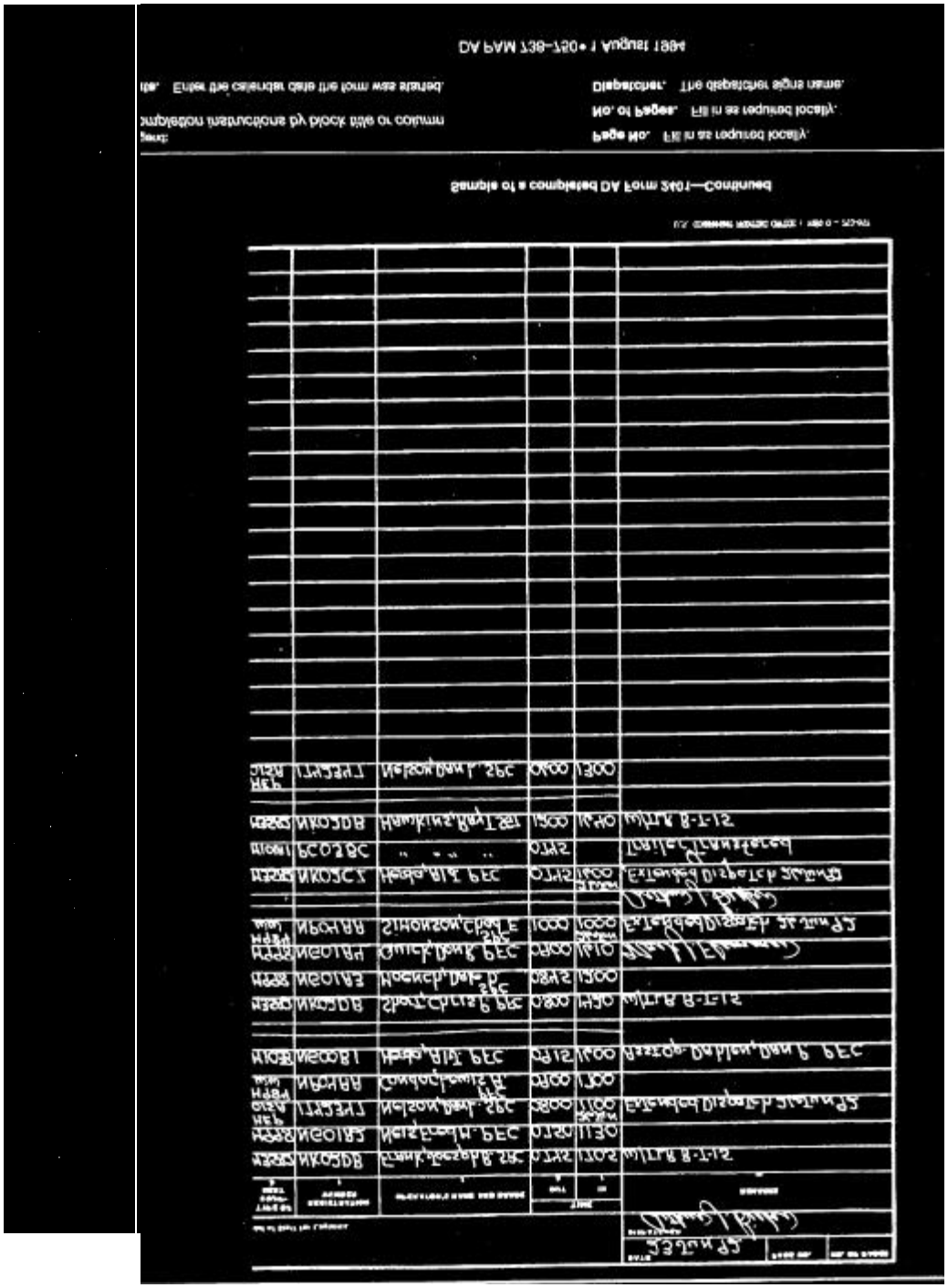


Figure B-1 Organizational Control Record for Equipment - DA Form 2401

Figure B-1 Organizational Control Record for Equipment - DA Form 2401- Continued

Instructions for Completing DD Form 314, Preventive Maintenance Schedule and Record.

Instruction are listed by block or column number or title (sample shown in Figure B-2).

Enter the current year's last 2 digits in the shaded box at the upper or lower left of the card.

REGISTRATION NUMBER: Enter the bar code number and serial number by drawing a horizontal line across the box to separate the numbers.

ADMINISTRATION NUMBER: Enter the license tag or locally assigned administrative number.

NOMENCLATURE: Enter the appropriate nomenclature of the equipment or vehicle.

MODEL: Enter the model or type.

ASSIGNED TO: Enter the activity name.

REMARKS:

(a) In pencil, annotate any maintenance information that will be needed in the future or on the replacement form for the next year. This information may include service symbols, dates for current and next year, and warranty information.

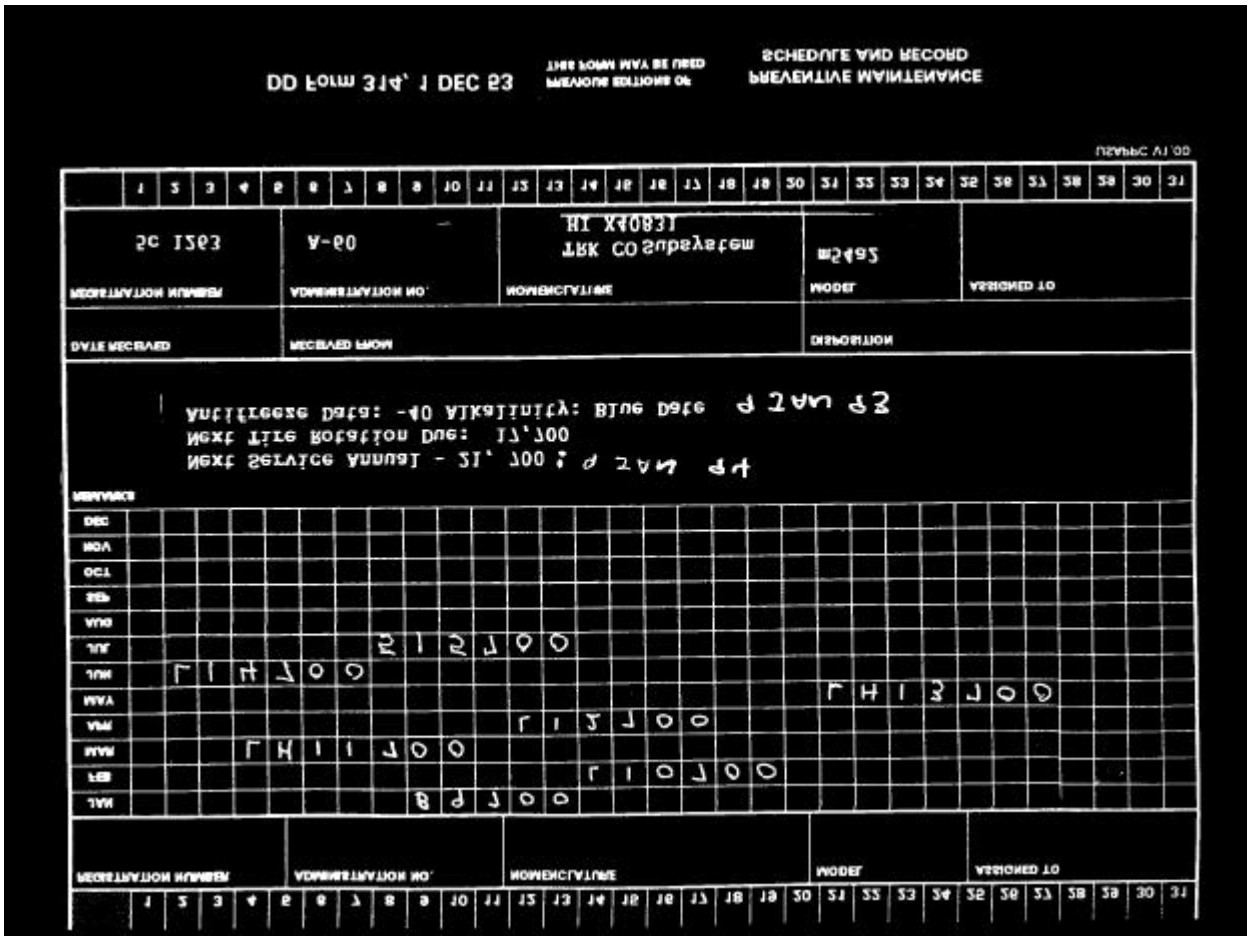
(b) Antifreeze entries for equipment under warranty or using commercial or arctic antifreeze.

(c) Record cooling systems antifreeze protection level in degrees. (TB 750-651)

DATE BLOCKS: Indicate services scheduled in pencil entries and services completed with ink.

DATE RECEIVED and RECEIVED FROM: Leave blank or use as needed locally.

DISPOSITION: Leave blank or use as needed for local information.



Preventive Maintenance Schedule and Record(DD Form 314)

Figure B-2 Preventive Maintenance Schedule and Record (DD Form 314)

Instructions for completing ENG Form 3662, Administrative Vehicle Operational Record

(Completion instruction are listed by block or column number or title (sample shown in Figure B-3)

(1) REPORT PERIOD. Enter the date the form is initiated. After the form is complete, enter the date to the right of the start date. (Example: 15 Feb. 95 --- 15 Mar. 95)

(2) NOMENCLATURE. Enter the equipment end item nomenclature/type and model.

(3) VEHICLE REPORTING. Leave blank [also leave (3b) blank "Group"].

(3a) CODE. Enter the appropriate end item code.

(4) TAG/REGISTRATION NO. Enter the registration or administrative and Bar Code number.

(5) ACTIVITY. Self explanatory.

(6) START MILEAGE. Self explanatory (use hour meter readings when appropriate).

(7) RENTAL RATE. Used for PRIP equipment only.

(8) SIGNATURE OF DISPATCHER.

(a) DATE. Enter the date of vehicle/equipment use. A separate line (columns a thru I) is to be completed daily on extended dispatches.

(b) NAME OF DRIVER. Enter the full name of the equipment operator.

(c), (d), (e) and (f). Self explanatory (beginning and return times and mileage or hours).

(g) and (h). Self explanatory (total miles traveled or hours used.

(I) LOAD WT/NO. OF PASS. Not used, unless required locally or the item is a motor vehicle.

(j) PROJECT NUMBER. Enter the appropriate cost code as required.

(k) and (l). Self explanatory (enter gallons of fuel or quarts of oil added).

Administrative Vehicle
Operational Record
ENG Form 3662

Figure B-3 ENG Form 3662

Instructions to complete DA Form 2408-9, Equipment Control Record (Overhaul Report)

(Completion instruction listed by block or column number or title (sample shown in Figure B-4)

Control Number Block. Will contain a six character control number.

(1) Organization. Enter the name of the activity performing the overhaul.

(2) Location. Enter the location and zip code or APO of the activity in block 1.

(3) Unit Identification Code. You will enter the UIC of the activity in block 1. Will not be blank. Do not use the 6 position DODAAC.

(4) Utilization Code. Leave blank.

(5) Vehicle Use Code. Enter USACE.

(6) Nomenclature. Enter the equipment name (noun).

(7) Model. Enter the model of the equipment.

(8) National Stock Number. Will contain the NSN of the item, if applicable, as a minimum enter the Federal Stock Class (FSC).

(9) Serial Number. Enter the complete serial number, listing all characters, to include any preprinted suffix and (or) prefix. The Overhaul Report control number should be entered when the item **does not have** a serial number. **For watercraft**, enter the hull number.

(10) Registration Number. Enter the assigned registration number . **For watercraft**, if no registration number has been assigned, enter the hull number.

(11) Year of Manufacture. This field has 4 alpha/numeric characters. The first character is the number of times the equipment has undergone overhaul (1=first time, 2= second, etc.). The next character is the letter "H", and will be used to designate overhaul actions. The last places will reflect the year the action is performed. An item first overhauled in 1990 would be shown as **"1H90"** and the same item overhauled in 1997, would be shown as **"2H97"**.

(12) through (16). Leave blank.

Instructions for completing DA Form 2408-9, Overhaul Report, (continued).

(17) Report Code. Enter the letter “V” on line (f) . This is used to show that the item was overhauled at an Army or contractor’s facility.

(18) Usage. Enter the cumulative mileage or hour meter reading taken just prior to this overhaul action. Insert an “M” in front of the numerals to indicate miles operated, or “K” for kilometers. If the mileage or hour meter is **not reset to “zero”** during this overhaul, be sure to record current mileage or hours in block 21 on the equipment **log book copy** of DA Form 2408-9.

(19) and (20). Leave blank.

(21) Remarks. When equipment is overhauled at an Army facility, they will annotate the Permanent Log Book copy: “Overhauled (month and year)” followed by the name of the facility. If this equipment has a DA Form 2408-8, this data will be in block “17" of that form.

(22) Inspector’s Signature. Leave blank.

(23) Julian Date. Enter the Julian for the report’s preparation date.

Equipment Control Record

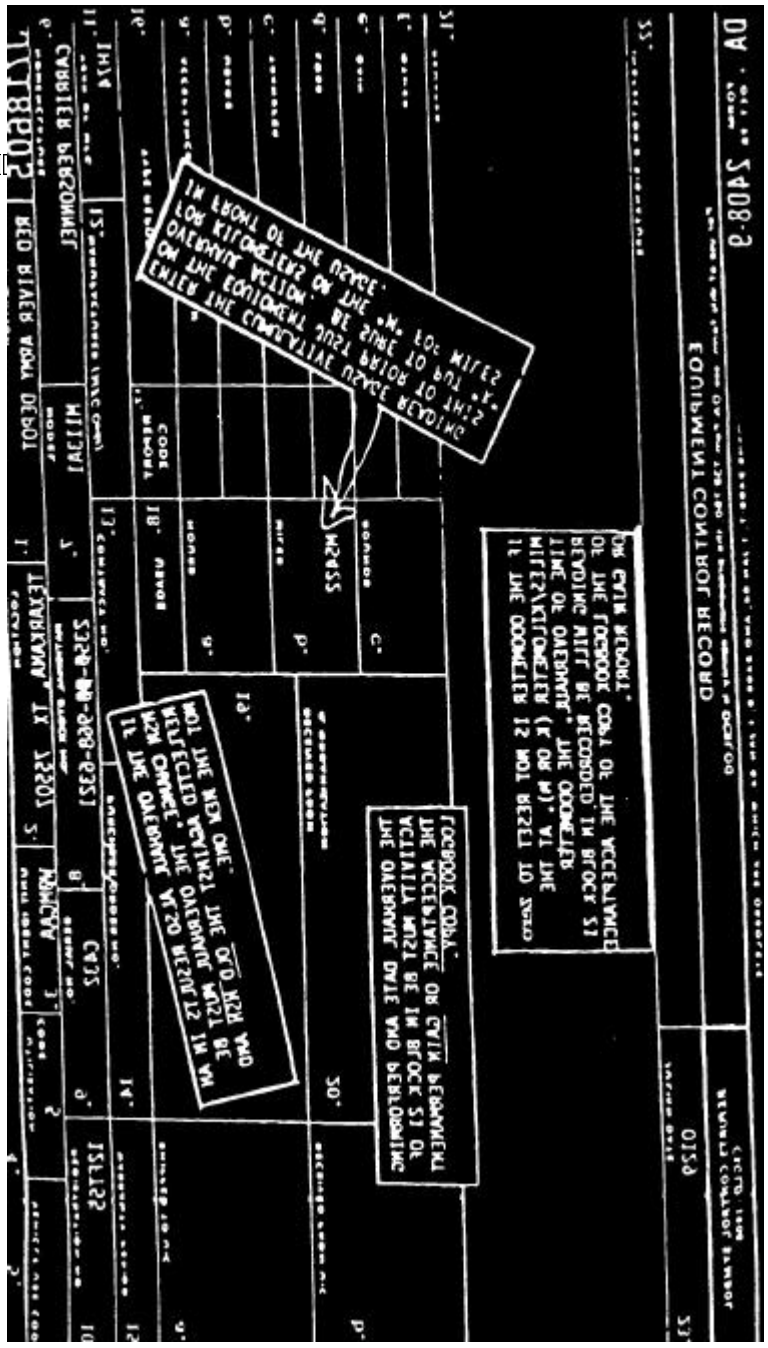


Figure B-4 Equipment Control Record DA Form 2408-9

Instructions for completing DA Form 2409, Equipment Maintenance Log, Consolidated.

(Completion instructions are listed by block or column number or title (See Figure B-5).

Section A - General. (1) Stock Number. Enter finance and accounting Expense Work Code.

(2) Model Number. Enter the model number of the item. Enter "NONE" in this field if the equipment has no model number. Enter the hull design number for watercraft.

(3) Serial Number. Enter the serial number of the item or hull design number for watercraft.

(4) Location. Enter the actual equipment location, in pencil.

(5) Frequency of Maintenance Inspection. Enter the type or frequency (interval) of the maintenance inspection (weekly, monthly, semiannual, etc.).

(6) Nomenclature. Enter the equipment name (noun). Also enter "(N)" for new or "(U)" for used, as needed to reflect the status of the equipment when it was first obtained.

(7) Expected Useful Life. Enter if known. This information is found in some equipment pubs. If expected life is not known, put "UNK" in this block.

(8) Expected Date of Retirement. Enter the calendar date the item is expected to be taken out of service. To estimate this date, add the life expectancy in block 7 to the date in block 11 ("date put in service"). Enter "UNK" when this data cannot be determined.

(9) Technical References. Enter the number for each technical publication that governs the item. Also enter "the equipment bar code number".

(10) Manufacturer. Enter the item's manufacturer or "UNK", if this data is not known.

(11) Date Put in Service. Enter the calendar date the item was accepted into inventory. If unknown, estimate and insert the prefix "EST" before the entry.

(12) Unit Cost. Enter the current cost of replacing the item.

Section B - Maintenance Inspection Record

Instructions for completing DA Form 2409, Equipment Maintenance Log, Consolidated (continued).

(a) **Date.** Enter the day, month, and the year of the completed maintenance action (scheduled maintenance inspection, load test, service or etc.).

(b) **Initials.** Enter the initials of the person completing the maintenance action.

(c) **Remarks.** (See narrative on **recording maintenance costs in paragraph 9-4**).

Section C - **Repair and Cost Record**

(a) **Date.** Enter the calendar date the repair work was finished. Also enter the completion date for safety recall work.

(b) **Work Order Number.** Enter the maintenance request or work order number if one was used. Also enter the safety recall number when appropriate.

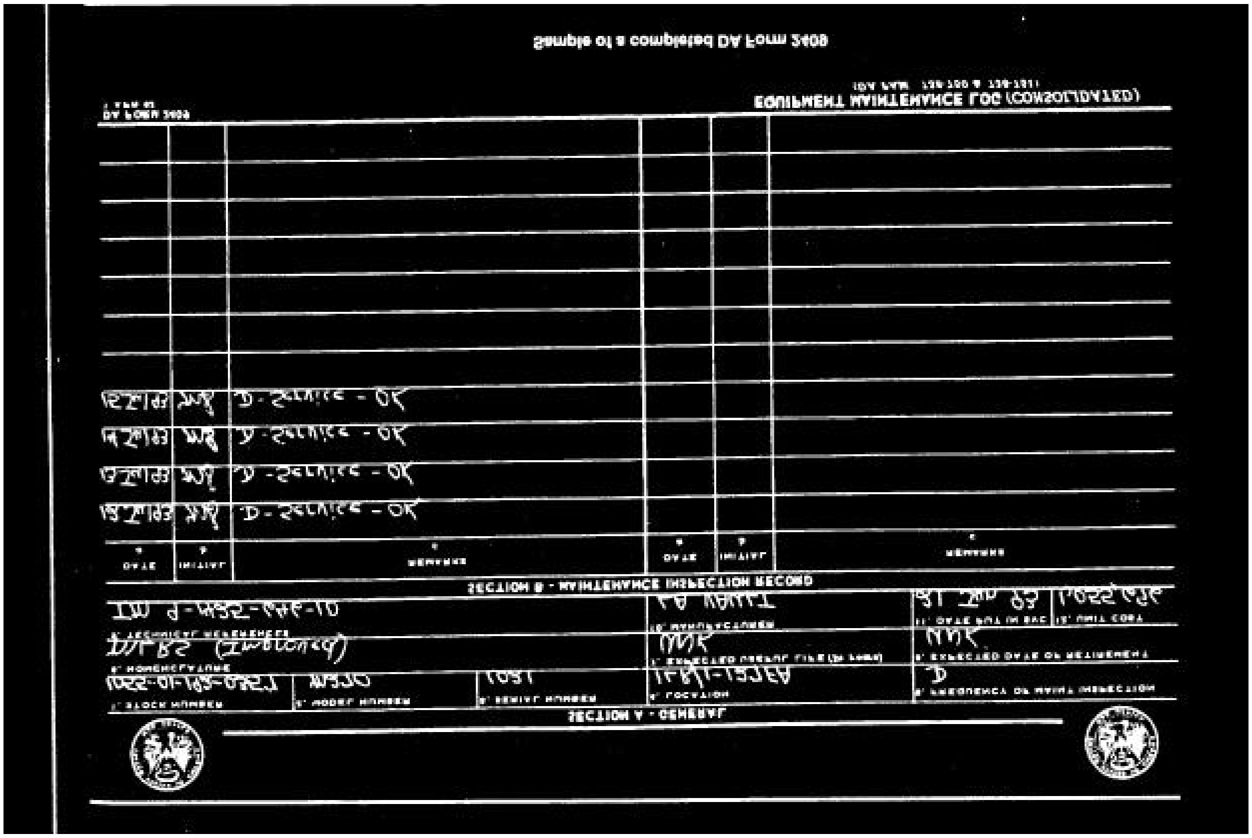
(c) **Nature of Repair.** Briefly describe the repair work or safety recall action.

(d) **Man-Hours.** Sum all man-hours used to complete the maintenance action, round the total to the nearest tenth hour, and enter in this block.

(e) **Remarks (Costs).** Fill in columns **e**, f, and **g** with appropriate entries for **parts, labor** and **total**. Do not include costs for common hardware, items from cannibalization points, and etc., in the column **e** entry for parts.

(e) **Remarks (Costs).** Fill in columns **e**, f, and **g** with appropriate entries for **parts, labor** and

Figure B-5 DA Form 2409



Sample of a completed DA Form 2409

EQUIPMENT MAINTENANCE LOG (CONSOLIDATED)

DA FORM 2409

SECTION A - GENERAL

1. STOCK NUMBER | 2. MODEL NUMBER | 3. SERIAL NUMBER | 4. LOCATION | 5. FREQUENCY OF MAINT INSPECTION

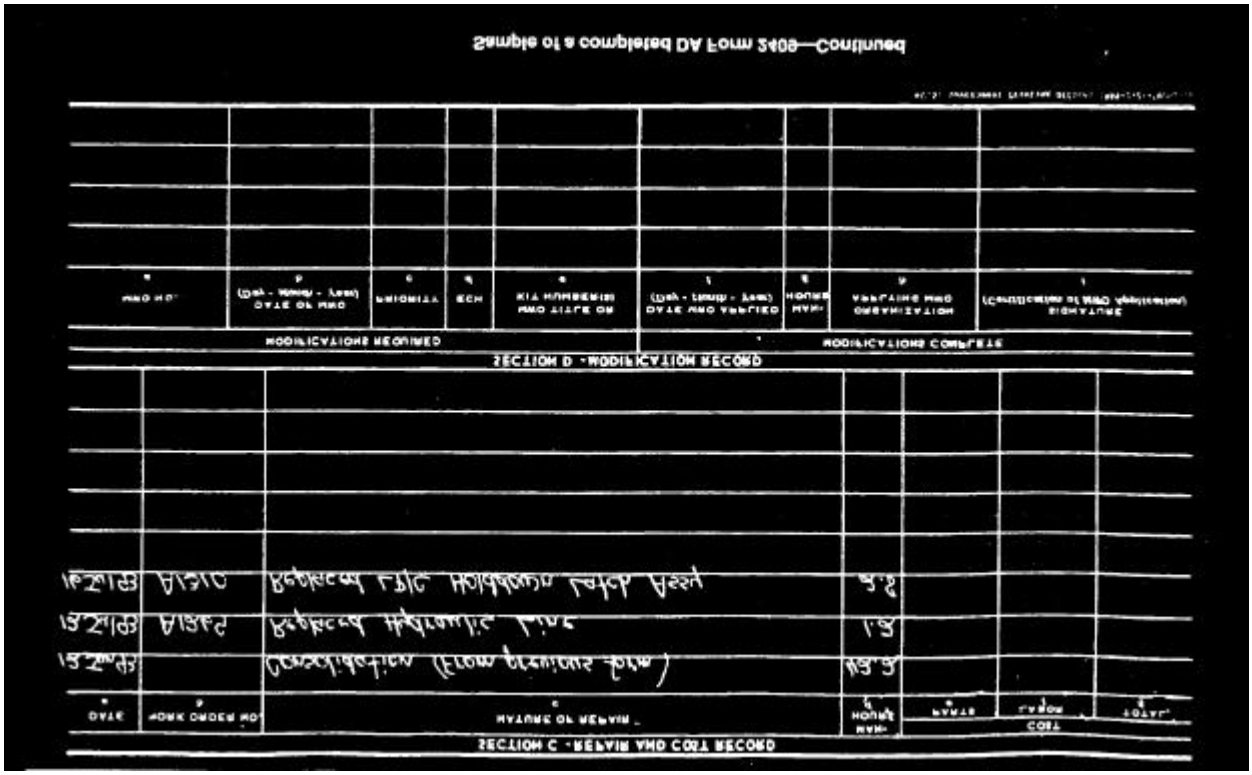
6. NOMENCLATURE | 7. EXPECTED USEFUL LIFE | 8. EXPECTED DATE OF RETIREMENT

9. TECHNICAL REFERENCES | 10. MANUFACTURER | 11. DATE PUT IN SVC | 12. UNIT COST

SECTION B - MAINTENANCE INSPECTION RECORD

DATE | INITIAL | REMARKS | DATE | INITIAL | REMARKS

Figure B-5 DA Form 2409



Sample of a completed DA Form 3318—Continued

SECTION C - REPAIR AND COST RECORD							
DATE	WORK ORDER NO.	NATURE OF REPAIR	MAN-HOURS	PARTS	COST LABOR	COST TOTAL
15 Jan 93		Inspection (from preventive form)	0.5			
15 Jan 93	A1342	Replaced hydraulic line	1.5			
15 Jan 93	A1343	Replaced main fuel hose	0.5			

SECTION D - MODIFICATION RECORD									
MWO NO.	MODIFICATIONS REQUIRED: DATE OF MWO (Day - Month - Year)	PRIORITY	ECH	KIT NUMBER(S) AND STATE ON HAND	MODIFICATIONS COMPLETE: DATE AND VERIFIED (Day - Month - Year)	MAN-HOURS	VERIFYING AND ORGANIZATION	SIGNATURE (Commander or DMWO representative)

Figure B-5 DA Form 2409 - (Continued)

Instructions for completing DA Form 2404, Equipment Inspection/Maintenance Worksheet used for operator PMCS/EMCS

(Completion instruction are listed by block or column number or title (See examples in Figure B-6 and Figure B-7).

(1) **ORGANIZATION.** Enter the name of the equipment owning activity.

(2) **NOMENCLATURE/MODEL.** Self explanatory.

(3) **REGISTRATION/SERIAL.** Enter the serial, registration, or assigned bar code number of the equipment. For watercraft enter the hull number. The locally assigned **administrative number** of the equipment or **license tag** number may be entered on the **top right** of form as shown in Figure B-7. The appropriate **funding account code** may be entered on the **top left** as also shown. If the form is completed for more than one item, leave blank.

(4) **MILES and HOURS.** When a deficiency or a shortcoming is found enter the miles or kilometers on the equipment's odometer at the end of the day's dispatch or operation. Round to the nearest mile or kilometer and enter the letter "K" before if the reading is in kilometers. Leave blank if the item does not have an odometer or if no faults are found. Also leave **Rounds Fired** and **Hot Starts** blank.

(5) **and (6).** Self explanatory (enter "PMCS, EMCS, Annual, ECOD, etc.", as appropriate).

(7) **TM NUMBER AND TM DATE.** Self explanatory (space is provided in case more than one TM governs an item.

(8) **SIGNATURE.** When a deficiency or shortcoming is found, the operator or supervisor signs and enters their rank. A signature in this block keeps the form from being used past current dispatch. Leave the "**Time**" entry blank unless a use is specified locally.

(9) **SIGNATURE.** The maintenance supervisor or the commander's designated representative will sign this field when corrective action is taken. Again, leave the "**Time**" entry blank unless a local use is specified.

(10) **through (10e).** Self explanatory except as noted. Leave **Man hours Required** blank unless a local use is designated. The same form may be used for more than one day. If no faults are found during PMCS before operations checks, enter the date in column "**c**".

Instructions for completing DA Form 2404, Equipment Inspection and Maintenance Worksheet used for operator PMCS/EMCS (continued)

If faults are found during or after operation, initial in column "**e**". When faults are not found, the same form can be used several days, even if it is also used for concurrent PMCS inspections, i.e., **W/M** (weekly/monthly). Just place the first letter of the type of PMCS performed ("**W**" or "**M**") in the column d, beside that day's date in column "**c**".

COLUMN a. TM Item No. Enter the PMCS item number for the fault listed in column c. If the PMCS has no item number, list the TM page, paragraph, or sequence number. Circle the number if the fault is listed in the "**Equipment is not ready/available if**" column or "**Not Mission Capable if**"column of the publication. If the PMCS has no ready /available or not mission capable column, circle the TM item number, page, or paragraph number of any fault that makes the equipment NMC. TM or other publication sections other than PMCS may be required for safety faults or local dispatching. For example, AR 385-55 lists safety checks that may not be in the PMCS. These faults will **not** count as NMC unless they are in the PMCS "not ready" or "not mission capable" column. You **will** list them, however, whenever you find a problem with one of them. For those faults not covered by the PMCS, leave this column blank.

COLUMN b. STATUS. Faults and deficiency status symbols are **preprinted on the form**.

COLUMN c. DEFICIENCIES. Do not enter faults on DA Form 2404 that can be repaired right away. Fix them and then continue the PMCS to see if others exist. If so, briefly describe here skipping one or two lines between faults. The blank space gives the maintenance activity room to note actions they take. When more than one TM covers the equipment, draw a line under the last entry for one TM. Under the line, write the TM number of the manual you will use next. Complete the PMCS, list uncorrected faults and submit the form maintenance supervisor. When using one form for several equipment items, enter the serial or administrative number of the item with the fault and enter the fault on the following line. Whenever faults not covered by the PMCS are listed, add this data (i.e., SOP or AR 385-55).

COLUMNS (d) and (e). CORRECTIVE ACTION and INITIALS. Explain corrective actions taken. Mechanics enter their initials in column "d" of the last line for each corrected fault. The maintenance supervisor will review corrected faults and decide what action is needed to clear remaining faults. A quality control inspector or his (her) designee will check all corrected status symbol "X" faults. The inspector then initials the status symbol.

Note: Form 2404 has a second page (see Figure B-9). It may be used as a continuation of page one and consists only of columns a through e.

Equipment Inspection and
Maintenance Worksheet (DA Form 2404--PMCS)

Figure B-6 DA Form 2404- (PMCS with no fault found)

Equipment Inspection and Maintenance Worksheet (DA Form 2404--PMCS)

Figure B-7 DA Form 2404- (PMCS with a deficiency noted)

Instructions for completing DA Form 2404, Equipment Inspection/ Maintenance Worksheet, performing scheduled services (Quarterly, Semi Annual and Annual).

(Completion instruction are listed by block or column number or title (See sample, Figure B-8).

(1) through (5). These fields are completed in the same manner as stated above in the instructions for completing the DA Form 2404 for PMCS/EMCS.

(6) TYPE INSPECTION. Self explanatory (enter "type of service or inspection to be done, such as lubrication, monthly, quarterly, semiannual, annual, etc.). When doing more than one inspection or service at the same time, put the service symbol in block 6 (L/S, etc.).

(7) through (10c). These fields are completed in the same manner as stated above in the instructions for completing the DA Form 2404 for PMCS/EMCS.

(10d). CORRECTIVE ACTION. Explain corrective action taken. For equipment needing a DA Form 2409, note repair work done and parts replaced. Put that information on the DA Form 2409. Print "DA Form 2409" in column d for those items. If parts are needed, the part's clerk will order them and enter the document numbers.
Faults that need support maintenance will go on a DA Form 2407. Print "DA Form 2407 (SPT) in column d.
The commander's designated representative will decide what maintenance can be delayed. Faults that do not affect the operation of the equipment and the operator's safety can be deferred when support is backed up and cannot get to the equipment right away, the needed repair part is not on hand, or other reasons at the commander's discretion.
Faults that the commander's designated representative decides to defer go on the DA Form 2408-14. Print "DA Form 2408-14" in column d for those items.

COLUMN e. INITIAL WHEN CORRECTED.

a. The person taking the action of transferring the information initials other entries.
b. The initials will go on the last line of the entry.
c. For quality control, the inspector or commander's designated representative will check all corrected status symbol **"X"** faults to ensure proper repairs have been completed. If properly repaired, the inspector or the commander's designated representative will initial status symbol.

Equipment Inspection and Maintenance Worksheet

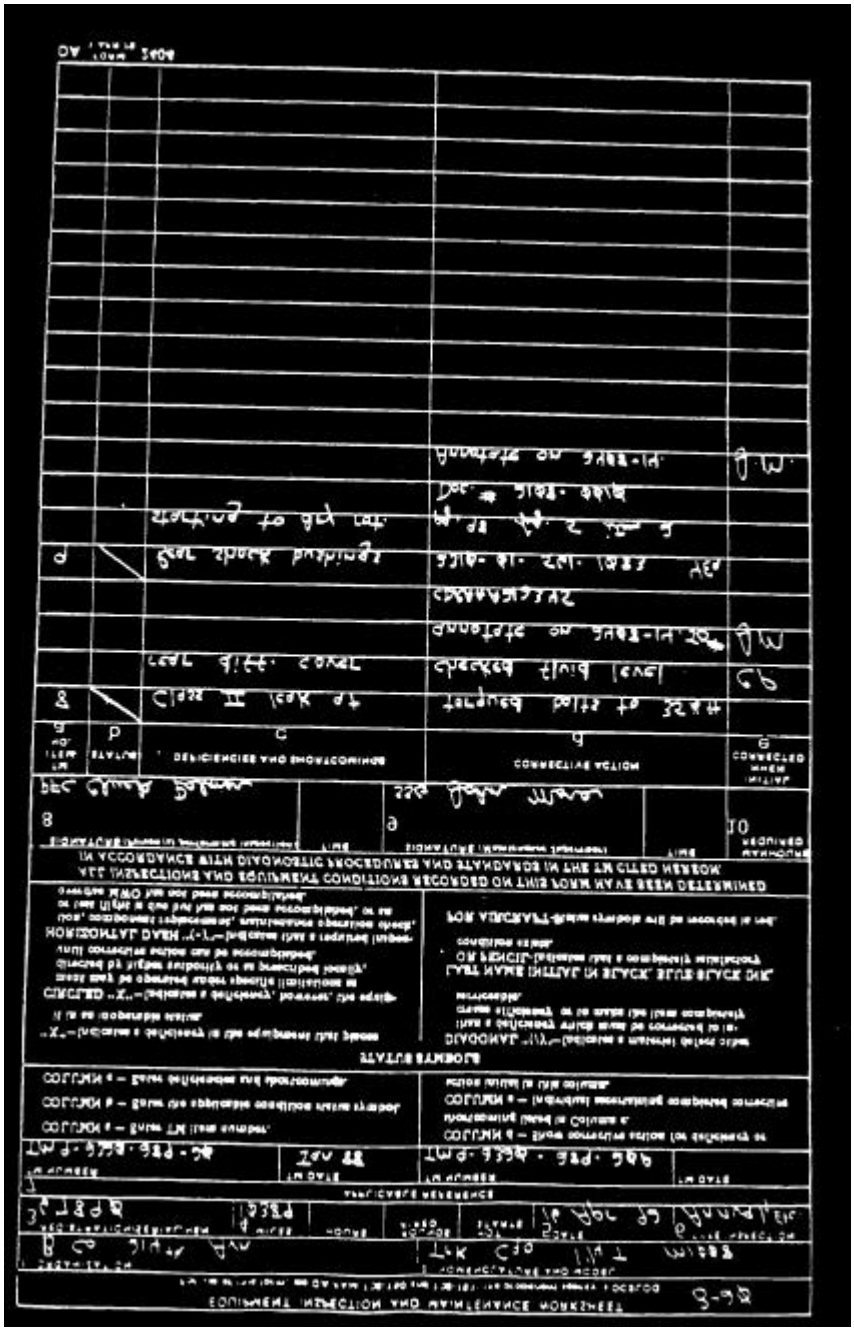


Figure B-8 DA Form 2404- (Periodic, i.e., Annual, Quarterly, etc.)

Instructions for completing DA Form 2404, Equipment Inspection/ Maintenance Worksheet performing scheduled services, (ECOD).

(Completion instruction are listed by block or column number or title (See example, Figure B-9).

(1) through (5). These fields are completed in the same manner as stated above in the instructions for completing the DA Form 2404 for PMCS/EMCS.

(6) TYPE INSPECTION. Self explanatory (enter "ECOD").

(7) through (9b). These fields are completed in the same manner as stated above in the instructions for completing the DA Form 2404 for PMCS/EMCS.

(10) MAN-HOURS. Leave blank or use as needed locally.

Note: In columns a, b, c, d, and e, enter required information as instructed in the following steps. If additional space is required, use an additional DA Form 2404.

Enter "Step 1" and print "Technical Inspection" (See Figure B-9).

Column a. TM Item Number. Enter the fault number.

Column b. Status. Enter the status symbol that applies to the fault.

Column c. Deficiencies and shortcomings. Enter each fault detected during the technical inspection that requires repair or replacement to restore equipment serviceability.

Column d. Corrective Action. Enter the maintenance action (repair or replace) required to correct the fault entered in column c.

Column e. Initial When Corrected. Entered the man-hours required to correct the fault identified in column c.

Enter Step "2." Print "Date of Manufacture": followed by the manufacture date shown on the equipment data plate or the date entered in block 11 of the item's DA Form 2408-9.

Enter Step "3." Print "Time Since New": followed by the cumulative miles, kilometers or hours on the equipment.

Instructions for completing DA Form 2404, Equipment Inspection/ Maintenance Worksheet performing scheduled services, (ECOD) Continued.

Enter Step "4." If an outstanding modification work order has not been applied to the equipment, print "Outstanding Modification Work Orders." List all applicable modifications that have not been accomplished. Next to each modification, enter the man-hours to apply the MWO.

Enter step "5." Print "Total Man-hours to Repair" followed by the estimated man-hours required to restore the equipment serviceability.

Enter step "6." Print "Total Man-hour Cost." In column d, enter total hours required to do the repair multiplied by the current local labor rate. In column e, enter total dollar cost.

Enter Step "7." Enter "Maintenance Expenditure Limits" followed by the applicable Technical Bulletin (TB).

Enter Step "8." Print "Repair Cost Factor" followed by the percentage and dollar factors, if cited in the TB listed in step 7.

Enter Step "9." Print "Required Replacement Parts" followed by a listing of the parts (NSN, noun, quantity ., and cost) required to replace/repair the item.

Enter Step "10." Print "Total Cost of Replacement Parts" followed in column e by the total cost of required replacement parts (total from step 9).

Enter step "11." Print "Total Cost of Repairs" followed by the total of Step 6 and Step 10 entries. Enter total column e.

Equipment Inspection and Maintenance Worksheet

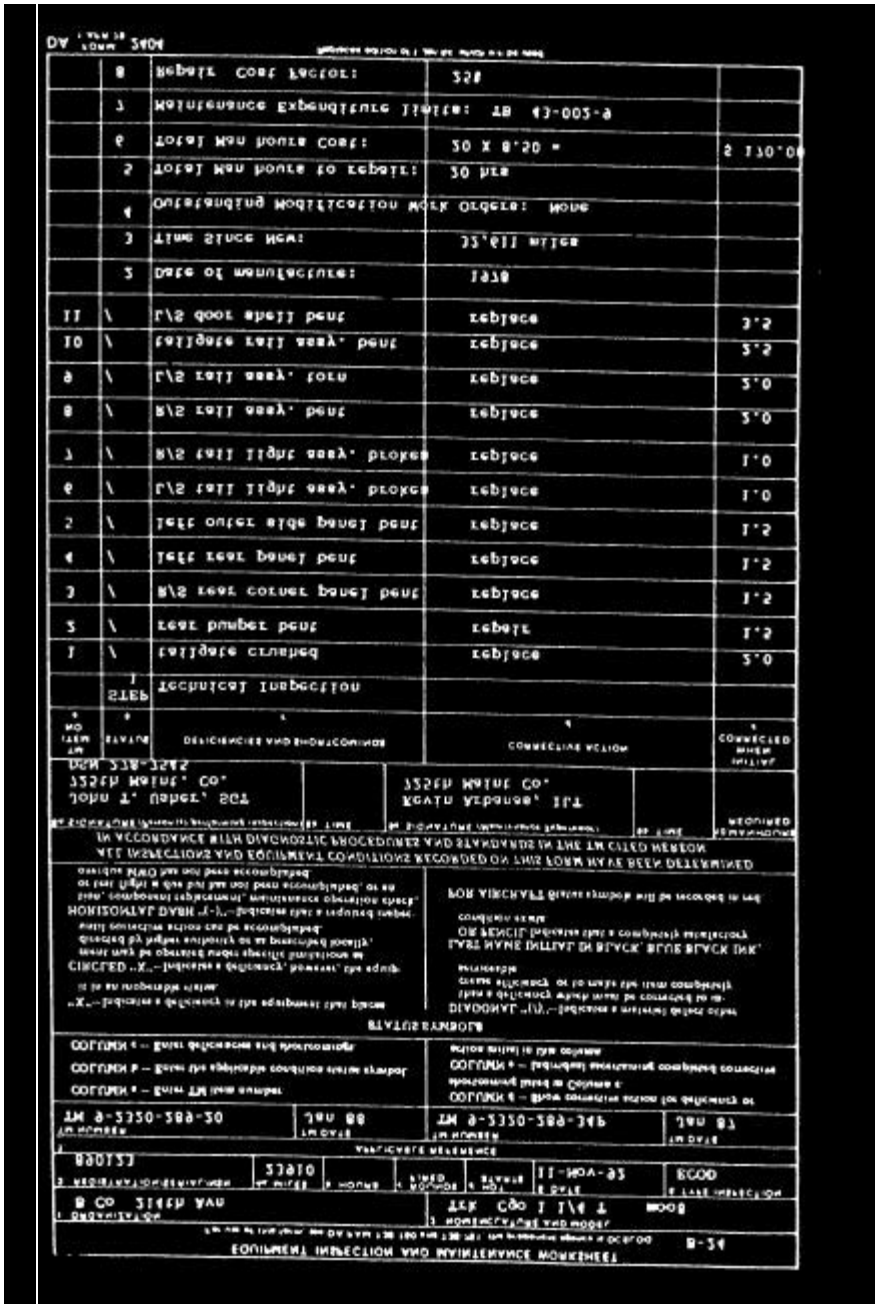


Figure B-9 DA Form 2404 Used for ECOD

Equipment Inspection and Maintenance Worksheet (DA Form 2404--ECOD)

Figure B-9 DA Form 2404 Used for ECOD- Continued

Instructions for completing DD Form 2026 Oil Analysis Request.

(Completion instruction are listed by block or column number or title (See example in Figure B-10).

(1) To Oil Analysis Lab: Enter the name of your supporting laboratory.

(2) From Major Command: Operating activity. Enter your major USACE Command, operating activity designation, address, UIC, and telephone number.

(3) Equipment Model/Approved Parts List (APL): Enter nomenclature and model number of the component, for example, Engine, D339TA, and Hydraulic System.

(4) Equipment Serial No: Enter the serial number of the engine or of components the oil is from. On watercraft and in other cases where power is supplied by more than one engine, the suffix may become a very important portion of the serial number. For example, the suffix may be used to distinguish between "left side mounted" and "right side mounted"in otherwise identical engines, where this distinction is important. If, in the above example, two engines were used to power a piece of equipment, D339TA-XX could be a left engine and D339TA-YY could be a right engine, or vice versa (many character and digit variations for suffixes exist).

(5) End Item Model/Hull No: Self explanatory.

(6) End Item Serial No./EIC: Enter End Item Serial Number.

(7) Date Sample Taken: Self explanatory.

(8) Local Time Sample Taken: Leave blank.

(9) Hours/Miles Since Overhaul: Enter cumulative number of hours/miles on the component since new or last overhauled.

(10) Hours/Miles Since Oil Change: Enter the number of hours/miles since last oil change on the component. If neither the component nor the end item has an odometer or hour meter, enter the total estimated hours.

(11) Reason for the Sample: Check the block that is applicable. When the reason is other, explain under remarks, for example, initial sample, loss of engine power, and excessive smoke.

(12) Oil Added Since Last Sample: Self explanatory.
Instructions for completing DD Form 2026 Oil Analysis Request, (continued).

(13) **Action Taken**: Leave Blank.

(14) **Discrepant Item**: Leave Blank.

(15) **How Malfunctioned: Leave Blank.**

(16) **How Found**: Leave Blank.

(17) **How Taken**: Self explanatory.

(18) **Sample Temperature**: Self explanatory.

(19) **Type Oil**: Self explanatory.

(20) **Remarks**: The individual who took the sample will print his or her name and sign. In addition, record the following equipment usage data in the lower right corner of the remarks block.

a. The odometer reading of the end item in which the component is installed. (Indicate whether the odometer reading represents miles (MI) or kilometers (KM). Do not convert the readings from miles to kilometers, or vice versa.)

b. The end item hour meter reading, if the end item does not have an odometer, i.e., HRS= 50.

c. If the end item has both an odometer and hour meter, only record the odometer reading.

d. Make sure total equipment usage is shown, i.e., the current meter reading plus usage from a replaced meter (s). The remarks block on DD Form 314 will indicate if the equipment had a meter replaced and the amount of usage recorded by the old meter.

Note: If the component is not installed in an end item, enter "uninstalled." Entries are **NOT REQUIRED** for end items not having an odometer or hour meter.

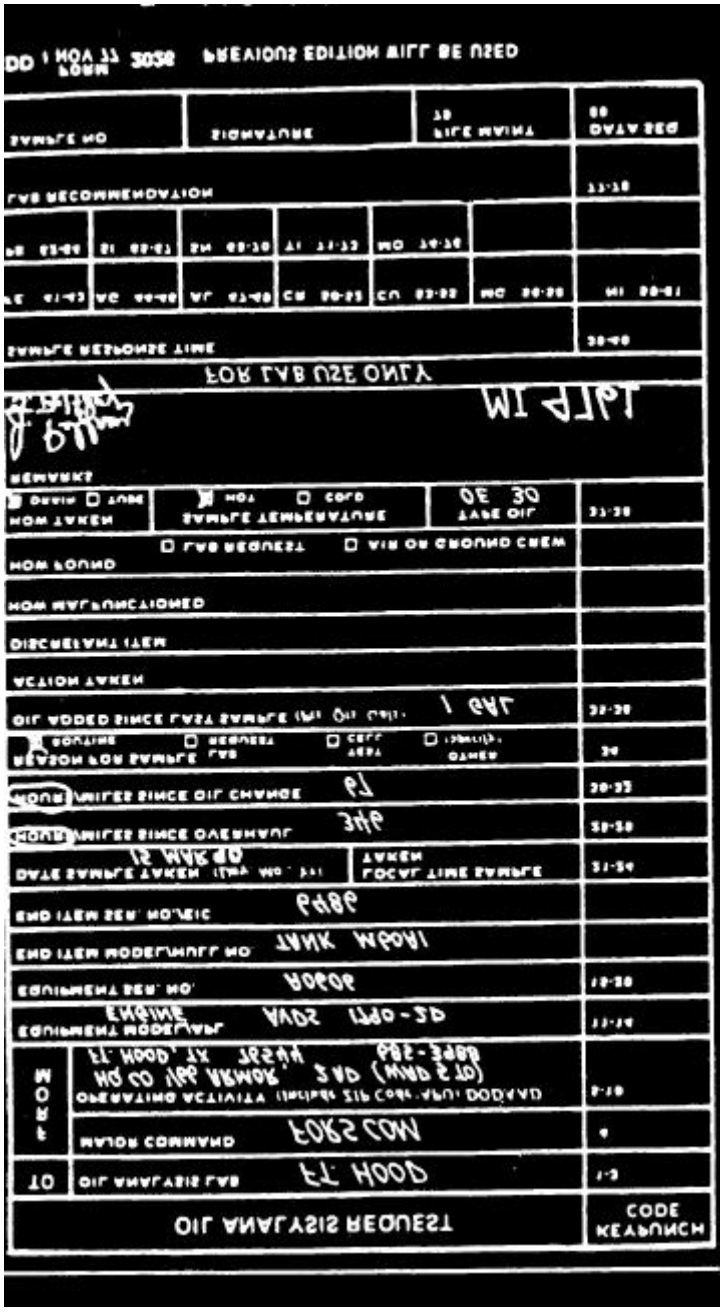


Figure B-10 Oil Analysis Request DD Form 2026

Instructions for completing DA Form 3254-R, Oil Analysis Recommendation and Feedback

(Completion instruction are listed by block or column number or title (See sample, Figure B-11).

(1) Through (11). These blocks will be completed by the laboratory.

(12). N/A

(13). Leave Blank.

(14). Feedback: Explain any diagnostics performed, discrepancies found, and actions taken to return the component to a serviceable condition.

(15). Form: Enter signature of the Maintenance Coordinator preparing the report.

(16). Date: Enter the calendar date (DDMMYY) the report was completed.

(17). To: Leave Blank.

Figure B-11 Oil Analysis Recommendation and Feedback (DA Form 3254-R)

Instructions for completing DA Form 2408-20, Oil Analysis Log.

(Completion instruction are listed by block or column number or title (See sample, Figure B-12).

(1) End Item.

(a) Nomenclature: Enter the noun of the end item.

(b) Make or Type: Enter the end item model number or type.

(c) Serial Number: Enter the end item serial number. Do not use the registration number.

(2) Sample Frequency: Enter the number of hours and the number of days of operation, after which, each subsequent sample should be scheduled and taken.

(3) Component.

(a) Nomenclature and Type: Enter the component noun and type, for example, engine 6V53 or transmission CD 850.

(b) Serial Number: Enter the component serial number.

(c) Time Since New or Overhaul: Enter the number of hours that was on the component when it was installed. Underline the word New if the component was new; the word **OVERHAUL** if it has been overhaul. This number will be carried forward to future DA Forms 2408-20 until the component is replaced or rebuilt.

(4) Date. Enter the calendar date the sample was taken.

(5) Hours.

(a) End Item: Enter total hours for the end item. Make sure you add any hours from replaced meters. See Chapter 4, DA Pam 738-750 for help in converting miles to hours for those end items that have no hour meter, but do have an odometer. If the end item does not have an hour meter or odometer, enter the estimated hours.

Instructions for completing DA Form 2408-20, Oil Analysis Log, (Continued).

(b) Component: Enter the total hours on the component. If the component does not have an hour meter, use the end item hour meter/odometer to determine this figure. Be careful to add any hours from replaced meters. See Chapter 4, DA Pam 738-750 in converting miles of operation to hours of operation . If neither the component nor the end item has an odometer or hour meter, enter the total estimated hours.

(c) Last Oil Change: Enter the hours since the last oil change. If the equipment does not have an hour meter, estimate the hours.

(6) Reason for Sample. Enter the word "ROUTINE" for routine samples. Enter the word "SPECIAL" for lab-directed samples.

(7) Results: Enter the results of the lab analysis: Normal, maintenance recommended by the lab, component removed, send in another sample, etc. If you need more room, use the Remarks Block.

Figure B-12 Oil Analysis Log (DA Form 2408-20)
Figure B-12 Oil Analysis Log (DA Form 2408-20)

Figure B-12 Oil Analysis Log (DA Form 2408-20)

Instructions for completing DA Form 5823, Equipment Identification Card (EIC)

(Completion instruction are listed by block or column number or title (See example in Figure B-13).

a. The EIC ties a particular equipment record folder to an item of equipment.

b. The EIC is located on the outside of each equipment record folder. The information on the card is used to identify the equipment covered and keep track of services due.

c. As a minimum the EIC will contain the following information.

(1) Name of the Maintenance Coordinator.

(2) Bar code number.

(3) Administrative number (I.D.), locally assigned or license tag number if assigned.

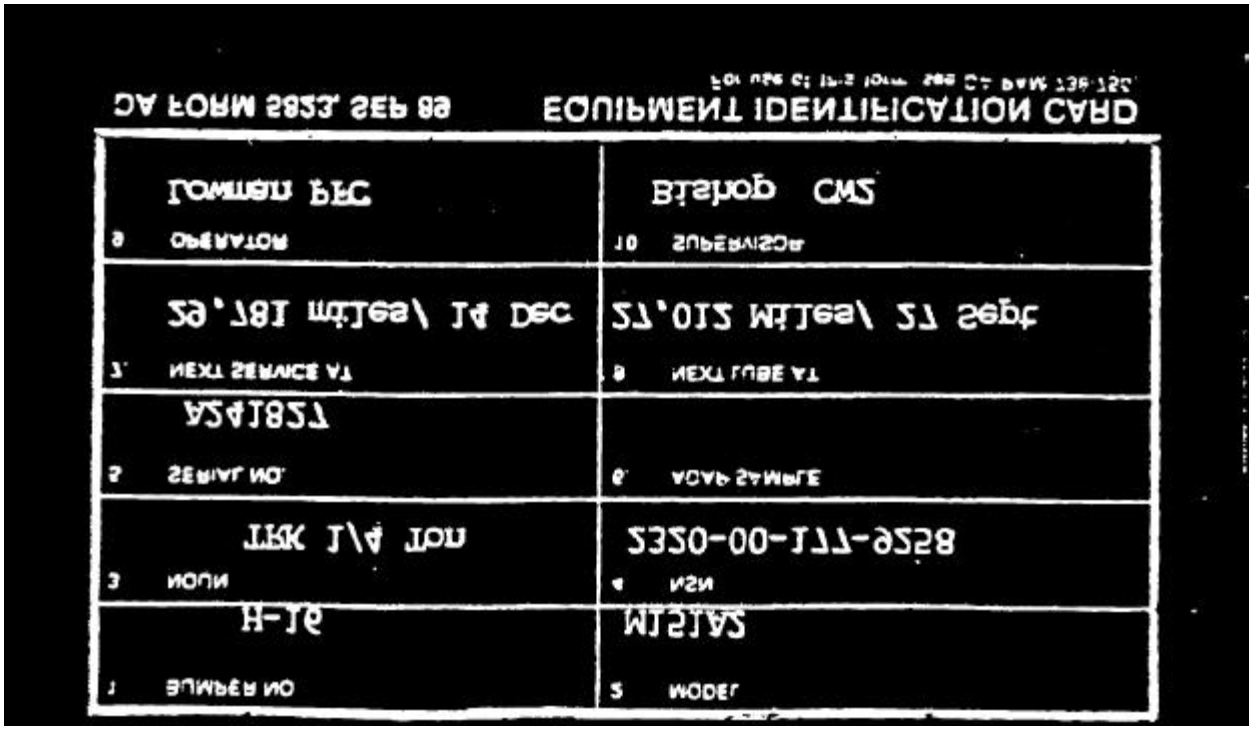
(4) Make and model.

(5) Serial number.

(6) Next scheduled service and lube date and corresponding hours/miles due (pencil entry).

(7) Enter the date and hours the next OAP/AOAP Sample is due (pencil entry).

d. The EIC information must be kept current and updated after each service.



EQUIPMENT IDENTIFICATION CARD

Figure B-13 EQUIPMENT IDENTIFICATION CARD (DA Form 5823)

Instructions for completing DA Form 2407, Maintenance Request

(Completion instruction are listed by block or column number or title (See example in Figure B-14).

(1a) UIC Customer. Enter the UIC of the customer that owns the equipment.

(1b) Customer Unit Name. Enter the name of the activity identified by the UIC in (1a).

(1c) Phone Number. Enter the phone number of the activity identified by the UIC in (1a).

(2a) SAMS-2 UIC/SAMS-1 TDA and (2c) MCSR Item. Leave blank.

(2b) Utilization Code. Enter "USACE).

Section II - Maintenance Activity Data. To be completed by support maintenance activity.

Section III - Equipment Data.

(5) Type MNT REQ Code. Enter "1".

(6) ID. Enter an identification (ID) code to show what type number will be entered in block 7. "A" refers to the National Stock Number, "C" refers to the Manufacturer's Code and Reference Number, "D" refers to the Management Control Number (MCN), and "P" is for all other types.

(7) NSN. Enter the National Stock Number or other number as shown in (6) above, as appropriate.

(8) Model Number. Self explanatory.

(9) Noun. Self explanatory.

(10a) ORGWON/DOC NO. Enter the organization's work order number or document number.

(10b) EIC. Enter the end item code or leave blank when unknown.

(11) Serial Number. Enter the serial number of the item in block 9. Use the registration number for non tactical, wheeled vehicles. Leave entry blank if the item has more than one serial number.

Instructions for completing DA Form 2407, Maintenance Request, (continued)

(12) Quantity. Self explanatory.

(13) PD. Enter the priority designator.

(14) Malfunction Description. This entry for maintenance use activity.

(15a) and (15b) (Failure Detection Information). Leave blank.

(16) Miles/Kilometers/Hours. Enter the cumulative mileage or hour meter reading (rounded to the nearest whole number). Enter the number beside **"K"** for kilometers, **"M"** for miles, or **"H"** for hours. Leave this entry blank when the item is not equipped with these meters.

(17) Project Code. Enter if appropriate or leave blank.

(18) Account Processing Code. Enter if appropriate or leave blank.

(19) In Warranty ?. Enter **"Y"** or **"N"** as appropriate. If **"Y"** (covered by manufacturer's warranty), **submit one maintenance request for each serial numbered item.**

(20) Admin. Number. Enter the assigned bumper, materiel control, or administrative number.

(21) Reimbursable Customer. This entry for maintenance use activity.

(22) Work Performed By. Enter a code that describes maintenance activity. Enter **"O"** for organization level, **"F"** for support level, **"K"** for contract maintenance and **"L"** for special actions.

(23) Signature. The commander or his designated representative signs in this field. The signature grants approval for use of **PD 01 through PD 10**. Leave this entry blank for any other **PD**.

(24) Describe Deficiencies or Symptoms. Using the information in column "c", DA Form 2404, briefly describe the problem (i.e.., "engine does not develop full power" or " equipment uses two quarts of oil daily"). Do not ask for general or specific repairs of parts to be replaced (i.e.., "replace the hydraulic system" and "repair as needed" are both inappropriate).

Instructions for completing DA Form 2407, Maintenance Request, (continued)

a. When the request is for work on multiple items with the same NSN, list the quantity, each serial number, and any other information that may be required to perform the repairs.

b. Furnish the **NSN for the end item** when repairs involve components or assemblies with recoverability codes **A, D, F, H, or L**. Enter the NSN on the last line in item 25. **Recoverability codes** are found in the **Army Master Data File** (AMDF) in the column labeled **"RC"**. It is also part of the **Source, Maintenance, and Recoverability** (SMR) code shown in parts manuals. **Use DA Form 2407-1**, when more space is needed to show pertinent data.

(25) Remarks. The maintenance support activity will use this block to indicate when **"on site" or "deferred maintenance"** is appropriate. The shop office personnel would then annotate the following data as appropriate: **"this work request was received on (date and signature)"**, or **"on site repair scheduled for (date and signature)"**, or **"the equipment owner will return item for repair on (date and signature)".**

Section VII. Action signatures.

(34a) Submitted By. Enter the first initial and last name of the person submitting this form.

(34b) Date. The original date the form was submitted to the support activity is **entered by the person that signed this form**.

Figure B-14 Maintenance Request (DA Form 2407)

Figure B-15 Motor Vehicle Accident Report (SF- 91)

Figure B-15 Motor Vehicle Accident Report - Continued (SF- 91)

Figure B-15 Motor Vehicle Accident Report - Continued (SF- 91)

Figure B-15 Motor Vehicle Accident Report - Continued (SF- 91)

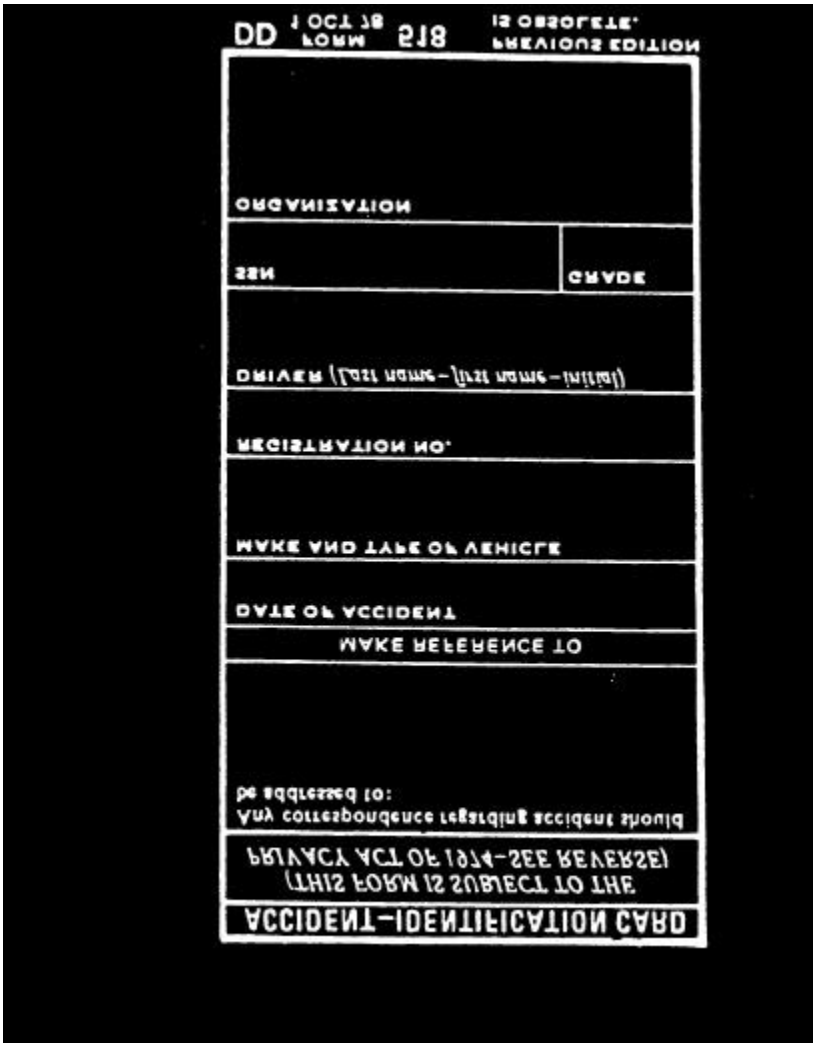


Figure B-16 Accident Identification Card DD Form 518

APPENDIX C

Materiel Maintenance Management Business Process

1. Determine Equipment Requirement

   a. New
   (1) Require justification
   (2) Obtain authorization
   (3) Obtain funding
   b. Replacement
   (1) Verify replacement criteria
   (2) Obtain funding

2. Determine Acquisition Alternatives

   a. Acquire from Defense Reutilization and Marketing Offices (DRMO)
   b. Borrow
   c. Rent
   d. Lease
   e. Purchase

3. Acquisition of Equipment

   a. Initiate a lateral transfer from another USACE activity
   b. Use government entities are first source of supply (utilize Defense Supply Center, Columbus OH, as a prime source for construction equipment, material handling equipment and related spares and repair parts (when it is advantageous).
   c. Use commercial vendor
   d. Prepare requisition document

4. Put Maintenance Management Program in Place

   a. Appoint Maintenance Officer to lead maintenance effort, giving focus and direction to the Materiel Maintenance program.
   b. Put policy and procedures in place
   c. Appoint maintenance managers
   d. Appoint maintenance coordinators
   e. Develop comprehensive maintenance plan
   f. Put equipment management procedures in place
   (1) Maintain equipment usage data

(2) Document maintenance costs for parts and labor
(3) Maintain equipment availability data (operational rates)

g. Promote safe usage of cranes, crane shovels, drag lines and similar equipment near electric power lines.

h. Conduct safety inspection and testing of lifting devices, (TB 43-0142)

I. Inspect and test air and other gas compressors (TB 43-0151)

j. Enroll equipment in Army Test Measurement and Diagnostic Equipment (TMDE) (AR 750-43, TB 750-25, TB 43-180). (FREE).

k. Enroll equipment and components in Army Oil Analysis Program (AOAP), (DA PAM 738-750, ER 750-1-1, EP 750-1-1). (FREE)

l. Ensure that Government Owned, Contractor Operated (GOCO) equipment, when required, is maintained IAW ER 750-1-1 and EP 750-1-1.

5. Receive Equipment

a. In process equipment (service)
b. Assign equipment to maintenance coordinator.
c. Add publications to library.

6. Determine Maintenance Requirements

a. Preventive Maintenance Check and Services (PMCS) Daily
b. Preventive Maintenance (PM) schedule services
c. Predictive maintenance schedule services.
d. Test required

7. Schedule Preventive Maintenance Services

a. Schedule services on (DD 314)
b. Army Oil Analysis Program (DD 314)
c. Schedule other test as required on (DD 314)

8. Place Equipment in Service

a. Prepare equipment record folder
b. Prepare operational records
c. Prepare maintenance records
d. Prepare equipment record jacket, for historical records

9. Dispatch and Record Equipment Usage

a. Maintain organizational control record for equipment (DA FORM 2401)
b. Submit monthly usage report on ENG FORM 3662, to record usage history.
c. Document fuel and oil consumption
d. Provide equipment usage report (for management use)

10. Perform Schedule Maintenance Services

a. Document scheduled maintenance service (PM) (DD 314)
b. Schedule next service (DD 314)
c. Document test results on (DD 314)
d. Schedule next test

11. Repair Management

a. Determine from previous usage if repair, overhaul, or replacement is justified.
b. One time repair in excess of 30 % of acquisition cost requires approval from the chief of logistics.
c. Consider overhaul or rebuild if in the best interest of USACE
d. Document equipment repair cost, parts and labor (DA Form 2409)
e. Document equipment non-operational days on DD 314
f. Place all historical records in record jacket

12. Disposal

a. Identify equipment eligible for disposal
b. Determine if equipment is to be replaced or is excess to district needs.
c. Circulate serviceable equipment excess to district needs
d. Prepare documentation for disposal
e. Remove equipment from property book.

APPENDIX D

OIL ANALYSIS REQUIREMENTS LIST

1. All item categories listed below are subject to oil sample analyses, and are listed in portions of DA PAM 738-750 and (or) EP 750-1-1, that govern the Army Oil Analysis Program (AOAP).

2. Wheeled Vehicles: All wheeled vehicles that are powered by a diesel engine that has an oil capacity of at least 5 gallons; all automatic transmission of that vehicle; and hydraulic systems of that vehicle with a capacity of at least 5 gallons, excluding brakes (for example, dump truck hydraulics, lift ramps, and etc.).

3. Watercraft: All watercraft with at least one diesel main engine that has an oil capacity of at least 5 gallons; all additional diesel engines with oil capacities of at least gallons (i.e., cranes, winches, generators, etc.); all hydraulic systems with a capacity of 5 gallons or greater; and other items determined necessary by local policy.

4. Construction Equipment. All equipment with diesel engines having an engine oil capacity of 5 gallons or greater; all automatic transmissions of the end item; all additional engines with engine oil capacities of 5 gallons or greater; and all hydraulic systems with a capacity of 5 gallons or greater (excluding brakes).

5. Special Purpose Equipment. All items with diesel engines having an engine oil capacity of 5 gallons or greater; all automatic transmissions; and all hydraulic systems with a capacity of 5 gallons or greater (excluding brakes).

6. Materiel Handling Equipment. All equipment with diesel engines having an engine oil capacity of 5 gallons or greater; all automatic transmissions; and all hydraulic systems with a capacity of 5 gallons or greater (excluding brakes).

APPENDIX E

OAP Sampling Intervals

ITEMS	HOURS	DAYS
Wheeled Vehicles	100	180
Locomotives**	25	90
Watercraft*	100	180
Construction Equip*	100	180
Material Handling Equip* (Fork Lift 4,000 lbs & Larger)	100	180
Support Equip Generator	100	180
Support Equip Air Comp	100	180
Support Equip Pumps	100	180
Support Equip Well Drillers*	100	180

*All designated hydraulic fluid systems will be sampled once a year

**Locomotives in daily use may extend sampling intervals to 100 hours or 90 days.

In cases where the manufacturer's recommendation for oil changes is less that the sample interval in this pamphlet, use the manufactures recommendation. For example, the wheeled vehicle interval in this EP is 100 hours, 180 days, or 5,000 miles, but Ford recommends 80 hours, 90 days or 4,000 miles. Therefore, the correct sample interval is Ford's recommendation. If the manufacturer recommends a larger interval than listed above, disregard and follow the above.

APPENDIX F

Supplies Required for Oil Sampling Program

Item	NSN	Units of Issue
Bottle, Oil Sampling	8125-01-082-9697	Box (100 ea.)
Pump, Oil Sampling	4930-01-119-4030	Each (ea.)
Tubing, Non-Metallic (1/4" OD)	4720-00-964-1433	Roll (1,000 ft)
Sack, shipping	8105-00-290-0340	Box (250 ea.)
Bag, Plastic	8105-00-837-7754	Box (1,000)
Sampling Valves for Engines	4820-00-845-1096	Each (ea.)
**********	**********	**********
Note: Replacement O-Rings for the Oil Sampling Pumps are:		
Old-Style Pump (with stand)		
O-Ring	5330-00-579-8156	Each (ea.)
O-Ring	5330-01-231-5216	Each (ea.)
New-Style Pump (no stand)		
O-Ring	5330-00-579-8156	Each (ea.)
O-Ring	5330-01-133-5858	Each (ea.)
O-Ring	5330-01-226-8750	Each (ea.)
O-Ring	5330-01-231-5616	Each (ea.)

APPENDIX G

CHECKLISTS FOR WATERCRAFT MAINTENANCE

VESSEL MAINTENANCE CHECK LIST DATE: _____

NAME OF VESSEL _____

ENGINE HOUR METER READINGS

PORT_____ STBD_____ PORT GEN._____ STBD GEN _____

REPAIRS NEEDED	TEST RUN	INITIALS
	1. Checked all propulsion and auxiliary equipment for excessive vibration, unusual noise, odors and leaks.	
	2. Checked all engine and steering cables and linkages for looseness binding and satisfactory response.	
	3. Checked all gages and instruments for proper operation.	
	4. Checked propeller and rudder shaft stuffing boxes for excessive leakage.	

ENGINES

PORT	STBD	PORT GEN	STBD GEN	WORK ITEMS PERFORMED	INITIALS
				Changed Oil	
				Changed Oil filters	
				Changed fuel filters	
				Changed reduction gear oil (1000 hrs)	
				Changed reduction gear oil filter	
				Lubricated tachometer drive	
				Oiled generator bearings	
				Adjusted all V. Belts	
				Adjusted propeller shaft glands	
				Checked batteries (load test, clean and tighten terminals)	
				Checked all zinc electrodes	
				Checked and cleaned air box drains	
				Checked all sea strainers	
				Inspected and cleaned blower screens (1000 hrs)	
				Inspected and cleaned heat exchanger cores (1000 hrs)	
				Inspected and replaced worn raw water pump components	
				Pressure tested engine cooling systems	
				Checked exhaust systems (clamps, hoses, brackets and mufflers)	

Figure G-1 Vessel Maintenance Checklist		
Steering System		**INITIALS**
	Greased all fittings and rudder stock upper bearings	
	Checked all control linkage for excessive wear and looseness	
	Adjusted rudder post packing glands	
BILGE SYSTEM		**INITIALS**
	Checked for proper pump operation	
	Checked valve and piping for leaks	
	Cleaned all foot valve screens	
	Cleaned strainer	
	Tested all bilge alarms	
	Tested bilge ventilation system	
FRESH WATER SYSTEM		**INITIALS**
	Checked for proper pump operation	
	Checked for leaks in system	
	Tested automatic pressure switch	

Remarks:

Figure G-1 Vessel Maintenance Checklist - (Continued)

DRIFT COLLECTION VESSEL MONTHLY MAINTENANCE WORKSHEET

NAME OF VESSEL_____ Date: _____

I. Vessel Test Run

a) Check all propulsion, auxiliary and crane engines, generators, transmissions, shafting and other auxiliary equipment for excessive vibration, unusual noise, odors and leaks.

Results: _____

b) Check all engine and steering cylinders, yolk and linkages for looseness, binding and satisfactory response. Also check air controllers for proper air flow and response.

Results: _____

c) Check all gages and instruments for proper operation.

Results: _____

d) Check crane/derrick controls, control levers and air control fittings (if any) and also check crane/derrick for proper operation.

Results: _____

e) Check propeller and rudder shaft stuffing boxes for excessive leakage.

Results: _____

II) Work Items Performed

a) Engines: (Work performed every 100 hours unless otherwise noted).

Figure G-2 Drift Collection Vessel Monthly Maintenance Worksheet

Port	STBD	No. 1 GEN	No. 2 GEN	CRANE	Mark a check ( ) in the correct box (below, left) when each work item is completed.
				*	1) Sample oil for analysis (200 hrs.)
				*	2) Change oil and oil filters (depending on analysis results
				* NA	3) Change fuel filters
				* NA	4) Change reduction gear oil and filter (1000 hrs.)
				*	5) Clean reduction
					6) Lubricate tachometer drive (200 hrs.)
					7) Oil Generator bearings
					8) Adjust all drive belts
					9) Adjust propeller shaft glands
					10) Service batteries
					11) Check all zinc electrodes (500 hrs.)
					12) Check and cleaned air box drains (500 hrs.)
					13) Service all sea strainers
					14) Inspect and cleaned blower screens (1000 hrs.)
					15) Inspect and cleaned heat exchanger cores (1000 hrs.)
					16) Inspect and replaced worn raw water components
					17) Pressure test engine cooling systems
					18) Check exhaust systems (clamps, hoses, brackets, and mufflers)

* Denotes action not required for Drift Master vessel.

Figure G-2 Drift Collection Vessel Monthly Maintenance Worksheet - (continued)

Items needing repair:

_____

_____

b) Crane/Derrick: (work performed every 90 days unless otherwise noted)

(Check)
_____ 1) Grease/inspect sheaves, pins, bushings, and winches and inspect all moving parts.
_____ 2) Sample hydraulic crane oil for analysis (6 mos.). *
_____ 3) Sample winch gear oil for analysis (6 mos.).
_____ 4) Inspect and fill the crane control valves in pilot house with oil (weekly).*

* Denotes action not required for Drift Master vessel.

Items needing repair:

_____

_____

c) Steering System: (work performed every 100 hours unless otherwise noted)

(Action)
_____ 1) Grease all fittings and rudder stock upper bearings (quarterly)
_____ 2) Check hydraulic cylinders and reservoirs
_____ 3) Check all gear boxes and/or steering wheel bearings for looseness and worn parts
_____ 4) Check all linkages for excessive wear and looseness
_____ 5) Adjust rudder post packing glands, repacked if needed.

Items needing repair:

_____

_____

d) Bilge System: (work performed every 100 hours unless otherwise noted)

(Action)
_____ 1) Check for proper pump operation, all pumps (200 hours)
_____ 2) Check valves and piping for leaks
_____ 3) Clean all foot valve screens
_____ 4) Clean strainers
_____ 5) Test all bilge alarms

Figure G-2 Drift Collection Vessel Monthly Maintenance Worksheet - (Continued)
Items needing repair:

_____

_____

e) Engine Room Ventilation System: (work performed weekly unless otherwise noted)

(Action)
_____ 1) Clean all supply fan screens of dirt and particles
_____ 2) Check blowers for proper operation and obstruction of vents
_____ 3) Test blower remote shutdowns for prompt and proper operation (6 mos.)

Items needing repair:
_____
_____

f) Fresh Water System: (work performed every week unless otherwise noted)

(Action)
_____ 1) Check pumps for leaks and proper operation
_____ 2) Check tanks and piping for leaks
_____ 3) Test automatic pressure switch (every month)
_____ 4) Clean fresh water strainers (6 mos.)
_____ 5) Drain and flush system (1 yr.)

Items needing repair:
_____
_____

g) Sewage and Waste Systems: (work performed daily unless otherwise noted)

(Action)
_____ 1) Check and inspect all sewage lines for leaks and corrosion
_____ 2) Inspect tank level and pump when needed
_____ 3) Check and inspect the vacuum pumps and flush with safety solvent (1 week) *

Items needing repair:
_____
_____

h) Fire Fighting Equipment: (work performed every 6 months unless otherwise noted)

Figure G-2 Drift Collection Vessel Monthly Maintenance Worksheet - (Continued)
(Action)
_____ 1) Test and inspect all hoses for rot and decay.
_____ 2) Test ran and pressurize fire main system and check for leaks and proper operation.

_____ 3) Grease and clean the sea suction strainer on the fire pump.
_____ 4) Test and inspect all portable fire extinguishers (1 month).
_____ 5) Company/manufacturer rep inspected/tested portable fire extinguishers (1 year)

Items needing repair:
_____
_____

I) Boiler: (work performed every 6 mos. unless otherwise noted)

(Action)
_____ 1) Inspect and test remote boiler shutdown.
_____ 2) Inspect and test pressure relief valve.
_____ 3) Inspect and test low water cut off.
_____ 4) Drain, flush and refill system.
_____ 5) Winterize system (1 year).
_____ 6) Check operation of system for proper temp., pressure, ignition and spark (daily)
_____ 7) Check exhaust stack for leaks (daily)
_____ 8) Check water lines for leaks (daily)

Items needing repair:
_____
_____

j) Fuel Oil System: (work performed every 6 mos. Unless otherwise noted)

(Action)
_____ 1) Grease and inspected pump for worn parts and leaks. (*)
_____ 2) Check and test emergency shutdown. (*)
_____ 3) Check and test remote shutdown. (*)
_____ 4) Clean and inspect the fuel oil suction strainer (1 mo.). (*)
_____ 5) Check and inspect all fuel oil lines for leaks (daily).

(*) Denotes action not required for GELBERMAN.

Items needing repair:
_____
_____

Figure G-2 Drift Collection Vessel Monthly Maintenance Worksheet - (Continued)
k) Deck Equipment: (work performed every 6 mos. unless otherwise noted)
(Action)
_____*1) Change 90W gear oil in boat hoist winch.
_____*2) Add lube oil to air lubricator of boat hoist.

_____*3) Change gear oil in deck capstans and inspected for wear on internal parts.
_____*4) Grease and inspected capstans for proper operation (quarterly).
_____ 5) Check whaler for correct working order and safety equipment (every use).
_____ 6) Check 12-V starting batteries in whaler for charge and clean terminals (every use).

* Denotes action not required for Drift Master vessel.

Items needing repair:
_____
_____

l) Compressed Air System: (work to be performed every 6 mos. except as noted)
(Action)
_____ 1) Blow down all air receivers for dirt and condensation (daily)
_____ *2) Check and add lube oil to the lubricators (monthly).
_____ 3) Test relief valves.
_____ 4) Change lube oil and replace felt pads on the air compressor
_____ 5) Add the silica gel tablets and inspect Van Air system.

* Denotes action not required for Drift Master vessel.

Items needing repair:
_____
_____

m) Air Conditioning System (HAYWARD and GELBERMAN only): (perform work as noted)

(Action)
_____ 1) Clean and inspected all raw water lines on suction side (weekly in season).
_____ 2) Check for leaks and proper operation of pump (daily in season).

Items needing repair:
_____
_____

PERFORMED BY: _____

Figure G-2 Drift Collection Vessel Monthly Maintenance Worksheet - (Continued)

BOAT OPERATIONS QUARTERLY SELF-INSPECTION REPORT

NAME OF VESSEL _____ DATE_____

1. HULL

(A) ARE THE HULL AND ALL UNDERWATER FITTINGS IN GOOD CONDITION? **Yes** **No**

(**EXAMINE**: HULL FOR ROT, LOOSE FASTENINGS, SPLIT PLANKS, FAULTY SEA COCKS, LEAKY STUFFING BOXES. ETC.)

REMARKS:_____

_____

(B) ARE THE STRUCTURAL PARTS IN THE HOUSE IN GOOD CONDITION? **Yes** **No**

(**EXAMINE:** HOUSE FOR LEAKY WINDOWS, ROT, CRACKED CANVAS, FAULTY HATCHES, JAMMING DOORS, CLOGGED SCUPPERS, LOOSE HAND NAILS, FAULTY HARDWARE, ETC.

REMARKS:_____

_____

(C). IS THE DECK EQUIPMENT IN " SHIP SHAPE" CONDITION? **Yes** **No**

REMARKS:_____

_____

EXAMINE: LIFE BOAT AND ITS ACCESSORIES , MAST AND YARD ARM AND ACCESSORIES, RING BUOYS, WHISTLE, BELL, FENDERS, RUNNING LIGHTS, COMPASS.

REMARKS:_____

_____

2.CONTROLS AND INSTRUMENTS

(A) IS THE ENTIRE STEERING GEAR IN GOOD OPERATING CONDITION? **Yes** **No**

EXAMINE: SHEAVES, CABLE, DRUMS, RUDDER POST, LEVERS, BELL CRANKS, RUDDER STUFFING BOXES FOR WEAR, DETERIORATION, CORROSION, IMPROPER LUBRICATION, ETC. EXAMINE TRANSMITTER, ACTUATOR, AND CONNECTING TUBING OF HYDRAULIC STEERING GEAR FOR WEAR AND LEAKAGE.

REMARKS:_____

_____

(B) ARE CLUTCH / THROTTLE CONTROLS IN GOOD OPERATING CONDITION? **Yes** **No**

Figure G-3 Boat Operations Quarterly Self Inspection Report

EXAMINE: BOWDEN WIRE, ROD, LINKAGES, LEVERS, AND BELL CRANKS ON MANUAL CONTROLS FOR CORROSION /WEAR.

REMARKS:_____

_____

EXAMINE: HYDRAULIC THROTTLE CONTROLS FOR WEAR, LEAKS, AND USE OF PROPER HYDRAULIC FLUID.

REMARKS:_____

_____

EXAMINE: POWER CYLINDER, VACUUM, RESERVOIR ELECTRICAL SYSTEM OF BENDIX CLUTCH CONTROLS FOR LEAKAGE, WEAR, AND ELECTRICAL INTEGRITY.

REMARKS:_____

_____

(C) ARE INDICATING GAUGES (TACHOMETERS, AMMETERS, ETC. IN GOOD CONDITION? **Yes** **No**

IS THERE ANY REASON FOR SUSPECTING THE ACCURACY OF THE INSTRUMENT READINGS? **Yes** **No**

REMARKS:_____

_____

3. FUEL TANKS, PIPING ETC.

(A). ARE FUEL TANKS/ PIPES TIGHT, IN GOOD CONDITION AND PROPERLY SECURED TO PREVENT MOVEMENTS? **Yes** **No**

OF WHAT MATERIAL ARE TANKS CONSTRUCTED? _____

IS THERE ANY EVIDENCE OF SERIOUS CORROSION? **Yes** **No**

(B) ARE FILLING PIPES AND SOUNDING HOLES ARRANGED SO THAT OVERFLOW/ VAPORS FROM FILLING WILL NOT ENTER THE INSIDE OF THE BOAT? **Yes** **No**

ARE SUCH PIPES TIGHTLY ATTACHED TO THE TANK AND TO THE DECK FITTINGS? **Yes** **No**
DO FILLING PIPES EXTEND NEARLY TO THE BOTTOM OF THE TANK? **Yes** **No**
ARE VENTS OF SUFFICIENT SIZE TO PREVENT BACK FLOW WHEN FILLING? **Yes** **No**

ARE FIRE PREVENTION SCREENS FITTED TO FUEL TANK VENT LINES? **Yes** **No**

(C) IS THE FUEL TANK VENT PIPE SOLIDLY ATTACHED TO THE TOP OF THE TANK? **Yes** **No**

DOES IT EMPTY INTO OPEN AIR, CLEAR OF OPENINGS IN THE VESSEL'S HULL / CABIN? **Yes** **No**

(D) CAN FUEL SUPPLY TO THE TANK BE SHUT OFF FROM OUTSIDE OF THE COMPARTMENT WHERE THE TANK IS LOCATED? **Yes** **No**

Figure G-3 Boat Operations Quarterly Self Inspection Report - (Continued)

IS THE VESSEL EQUIPPED WITH AN AUTOMATIC SHUT-OFF VALVE FOR EACH TANK? **Yes** **No**

(E) ARE ALL DRAIN OPENINGS IN FUEL TANKS / PIPING, ETC. FITTED WITH SUBSTANTIAL TIGHT FITTING PLUGS? **Yes** **No**

(F) IS THE FUEL SYSTEM EXPOSED TO DANGER OF ACCIDENTAL PIERCING BY NAILS, ETC.? **Yes** **No**

4. PROPULSION ENGINE AND ACCESSORIES

(A) ARE THE CARBURETORS EQUIPPED WITH BACK-FIRE FLAME ARRESTERS? **Yes** **No**

DO THEY (EXCEPT DOWN DRAFT TYPE) HAVE DRIP PANS UNDERNEATH TO PREVENT GASOLINE FROM DRIPPING TO BILGES? **Yes** **No**

(B) ARE THE FULL LENGTH DRIP PANS UNDER ENGINES TO PREVENT PETROLEUM FROM DRIPPING INTO BILGES? IF SO, WHAT MEANS ARE THERE FOR THE REMOVAL OF THE ACCUMULATION IN THE PAN? **Yes** **No**

REMARKS:_____

_____

C. OF WHAT MATERIALS ARE THE EXHAUST PIPING SYSTEMS COMPOSED AND ARE ALL IN GOOD CONDITION?_____ **Yes** **No**

EXAMINE: THE ENTIRE EXHAUST SYSTEM AND REPORT ALL EVIDENCE OF LEAKS, CORROSION, DETERIORATION OF RUBBER, ETC.

REMARKS:_____

_____

ARE ALL PIPES SO ARRANGED OR INSULTED SO AS NOT TO SCORCH OR IGNITE ADJACENT WOODWORK? **Yes** **No**

EXAMINE AND REPORT CONDITION OF CARBURETOR , FUEL PUMP, GENERATOR, STARTER, VALUES, GASKETS, BEARINGS, ETC.

REMARKS:_____

_____

D. IS THE COMPLETE TRANSMISSION IN GOOD WORKING ORDER? **Yes** **No**

EXAMINE: REDUCTIONS, REVERSE GEARS, COUPLINGS, AND SPRING BEARINGS.

REMARKS:_____

_____

E. ARE THE ENGINES OPERATING SATISFACTORILY? **Yes** **No**

Figure G-3 Boat Operations Quarterly Self Inspection Report - (Continued)

REPORT THE FOLLOWING CHARACTERISTICS OF EACH ENGINE:

		PORT	STARBOARD
ENGINE REVOLUTIONS	R.P.M.	_____	_____
OIL PRESSURE	P.S.I.	_____	_____
OIL TEMPERATURE	DEG. F	_____	_____

ENGINE HOUR METER READING _____ _____

CONDITION OF EXHAUST ON DIESEL _____ _____

COOLING WATER TEMPERATURE DEG.F _____ _____

EXHAUST TEMPERATURE AND COMPRESSING PRESSURE

	TEMP	PRES	TEMP	PRES
CYL. No. 1	_____	_____	_____	_____
CYL. No. 2	_____	_____	_____	_____
CYL. No. 3	_____	_____	_____	_____
CYL. No. 4	_____	_____	_____	_____
CYL. No. 5	_____	_____	_____	_____
CYL. No. 6	_____	_____	_____	_____
CYL. No. 7	_____	_____	_____	_____
CYL. No. 8	_____	_____	_____	_____

DATE READINGS TAKEN: _____

5. ELECTRICAL SYSTEM

A. IS THE ENTIRE ELECTRICAL SYSTEM IN GOOD CONDITION? **Yes** **No**

EXAMINE: WIRING. FITTINGS, SWITCHBOARDS, PANELS, FUSE BOXES, ETC. FOR SHORT CIRCUITS, WETTING, DETERIORATION, ETC.

Figure G-3 Boat Operations Quarterly Self Inspection Report - (Continued)

REMARKS:_____

_____

B. ARE MARINE TYPE ELECTRICAL APPLIANCES & FITTINGS INSTALLED IN SPACES LIKELY TO CONTAIN EXPLOSIVE MIXTURES SUCH AS IN ENGINE AND BATTERY COMPARTMENTS? **Yes** **No**

C. ARE ELECTRIC STORAGE BATTERIES LOCATED IN WELL VENTILATED SPACES? **Yes** **No**

ARE THEY PROTECTED FROM SHORTING/ SPARKING DUE TO DRIPPING/FALLING OBJECTS? **Yes** **No**

D. ARE THE BATTERIES BEING PROPERLY CHARGED? **Yes** **No**

E. ARE ANY OF THE CIRCUITS OVERLOADED? **Yes** **No**

6. VENTILATION

(A) ARE ENCLOSED PARTS OF VESSEL PROVIDED WITH MEANS OF PROPER VENTILATION? **Yes** **No**

(B) DO SPACES WITH GASOLINE, MACHINERY, STORAGE BATTERIES, ETC. INSIDE HAVE A MEANS TO CIRCULATE AIR IN LOWER PART OF HOLD OR BILGES? **Yes** **No**
EXAMINE: BLOWERS, MOTORS AND WIRING FOR FAILURE, SHORT CIRCUIT AND CORROSION.

REMARKS:_____

_____

(C) IS ENGINE ROOM BLOWER INTERLOCKED WITH STARTING SWITCH **Yes** **No**
(D) HAVE COWLS BEEN ACCIDENTALLY OBSTRUCTED OR BLOCKED? **Yes** **No**

(E) DOES THE HEATING SYSTEM OR STACK EMIT DANGEROUS FUMES INTO CABINS AND ARE EITHER A FIRE HAZARD? **Yes** **No**

7 SAFETY AND FIRE FIGHTING EQUIPMENT

(A) IS EQUIPMENT SUCH AS U.S. COAST GUARD APPROVED LIFE PRESERVERS, SAFETY RAILS, LIFE LINES, FIRST AID KITS, ETC. SERVICEABLE AND IN GOOD CONDITION? **Yes** **No**

(B) ARE FIRE EXTINGUISHER (PORTABLE & FIXED) FULLY CHARGED AND READY TO USE? **Yes** **No**

WHAT IS THE DATE OF LAST WEIGHING OF CYLINDERS? _____

EXAMINE: TANKS, VALVES, NOZZLES, PIPING, ETC. FOR WEAR, LEAKAGE, CORROSION, TAMPERING

IS THE CO2 SYSTEM EQUIPPED WITH AN AUTOMATIC DISCHARGE DEVICE? **Yes** **No**
STATE LOCATION OF HAND PULL(S). _____

REMARKS:_____

_____

Figure G-3 Boat Operations Quarterly Self Inspection Report - (Continued)

(C) IS THE VESSEL EQUIPPED WITH ALL SAFETY DEVICES ENUMERATED IN INSPECTION CERTIFICATE?

IF NOT, LIST MISSING ITEMS. _____

(D) IS THE VESSEL EQUIPPED WITH HAND PUMP TO REMOVE H2O FROM BILGES? **Yes** **No**

IS THE VESSEL EQUIPPED WITH POWER DRIVEN BILGE PUMP? **Yes** **No**

EXAMINE: PUMPS, MOTORS, BELTING, PIPING FOR CORROSION, DETERIORATION, ETC.

REMARKS:_____

_____

(E) IS THERE A PAINTER LINE ATTACHED TO THE BOW? **Yes** **No**

(F) IS THERE A HATCHET ABOARD? **Yes** **No**

8. LUBRICATING OIL

(A) IS THE MANUFACTURERS RECOMMEND OIL USED FOR MACHINERY DURING NORMAL AND SUB-FREEZING TEMPERATURES? **Yes** **No**

LIST GRADE, SAE, OR NAVY SYMBOL OF OIL USED IN PROPELLING ENGINES, REVERSE GEAR / CLUTCH,

AND IN AUXILIARY ENGINES: _____

_____

(B) IS THE VESSEL EQUIPPED WITH LUBRICATING OIL CLASSIFIERS? **Yes** **No**
TYPE _____ WHAT IS THE DATE OF LAST OIL CHANGE? _____
DATE CARTRIDGE LAST CHANGED: _____

9. PROPELLERS and SHAFTS

(A) ARE PROPELLERS, TAIL AND LINE SHAFTS ETC. IN GOOD CONDITION? **Yes** **No**

EXAMINE: LINE SHAFTS, COUPLINGS, INBOARD BEARINGS, STUFFING BOXES FOR WEAR, LEAKAGE THROUGH SHAFT LUGS, STRUT FITTINGS, ETC.

REPORT: EXCESSIVE VIBRATION DUE TO DAMAGED SHAFTING OR PROPELLERS. _____

_____

REMARKS:_____

_____

Figure G-3 Boat Operations Quarterly Self Inspection Report - (Continued)

10. IMPROVEMENTS

HOW IN YOUR OPINION, CAN THE SAFETY OR EFFICIENCY OF THIS BOAT BE INCREASED?

_____

_____

_____

_____

_____

I CERTIFY THAT ALL OF THE ABOVE STATEMENTS ARE BASED ON EXAMINATIONS MADE BY THE UNDERSIGNED.

NAME: _____ (ENGINEER OR OPERATOR) SIGNATURE: _____

APPROVED:

NAME: _____ (MASTER) SIGNATURE: _____

Figure G-3 Boat Operations Quarterly Self Inspection Report - (Continued)

Drift Collection Vessel Preventive Maintenance Schedule Page (1)

NAME OF VESSEL_____ Fiscal Year_____

Month	Octt	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Steering Gear												
C02 System												
Salt H20 Sea Strainer												
*Rudder												
*Eng Oil/Filter												
*Oil/Filt Crane												
Lube Oil/Filt Misc												
Lube Oil//Filter Wk. Boat												
Heating Boiler Tubes												
Drift Nets												
Sani System Flush												
Fire Main & Pump												

Figure G-4 Drift Collection Vessel Preventive Maintenance Schedule

Drift Collection Vessel Preventive Maintenance Schedule Page (2)

NAME OF VESSEL Fiscal Year

Monh	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Batt & Alarms												
Cool H20 Sys. Lines												
* Main Eng.												

*Denotes equipment may be mounted on both port and starboard sides of vessel.

Figure G-4 Drift Collection Vessel Preventive Maintenance Schedule - (Continued)

Job Order History

1. Problem
   Vessel/Equipment:_____

Description:_____
_____
_____
_____

Type (Check one)

Preventive Maintenance _____ Emergency _____ PRIP _____ Other _____

Repairs Requested by: _____ Date _____

Authorized Master Tug Foreman: _____ Date _____

Plant Operations Section: _____ Date _____

2. Repair By	Date	Schedule	Actual
Shop _____ Yes ___ No ___	____	_____	_____
Contractor _____ Yes ___ No ____	____	_____	_____

Comments:
_____
_____
_____
_____

Plant Support Section: _____ Date _____

3. Vendor and Call Number : _____

   Date and Time Called: _____

4. Chief, Plant Branch _____ Date _____

Figure G-5 Equipment Job Order History

Job Cost Summary

DATE	LABOR	MATERIALS		DATE	LABOR	MATERIALS	
		REQ HR.	VALUE			REQ HR.	VALUE

DATE	SHOP EXPENSE	SHOP OVERHEAD	STREHSE OPER	CREDIT DISTRIB	BALANCE

DATE CLOSED:	ESTIMATED COST:	COMPLETED COST:	SUBMITTED BY (Signature)

COMPLETION REPORT

Summary of Work Done: (Describe all deviations from specifications and mention all circumstances of importance for operator and/or next overhead.)

INSPECTED BY: (Signature)

SUBMITTED BY: (Signature)	ACCEPTANCE RECOMMENDED BY: (Signature)	ACCEPTED BY: (Signature)

Figure G-5 Equipment Job Order History - (Continued)

SHOP ORDER - JOB COST SUMMARY COMPLETION REPORT	SHOP ORDER NUMBER:
	NAME OF PLANT:
	LOCATION:
	DATE:

SHOP ORDER			
SPECIFICATIONS ALL MATERIALS TO BE FURNISHED BY SHOP EXCEPT:			
ESTIMATED COST:	WORK TO COMMENCE:	WORK TO BE COMPLETED:	
REMARKS:			
Prepared By (Signature)	Submitted By (Signature)	Recommended By (Signature)	Approved By (Signature)

Figure G-5 Equipment Job Order History - (Continued)

APPENDIX H

Equipment Exempt From Usage Reporting in USACE

The following equipment categories are usually exempt from having to meet usage standards:

a. Information Management Equipment. This category is covered by the AR 25-series.

b. Government furnished equipment (GFE). Contracts will include the requirement for the collection and recording of usage data.

c. Defense Industrial Plant Equipment Center (DIPEC) controlled equipment. Although this category is exempt, **use ER 700-1-1 walk-through procedures** to evaluate the need for it.

d. Equipment used in direct support of a research, development, test, and evaluation mission (RDTE). This category is exempt, but also evaluate using **walk-through procedures**.

e. One of a kind equipment. The requirement to collect usage data on one of a kind equipment is not required. “One of a kind,” is defined as that “one and only specific type” of equipment located at a project site. This does mean equipment that is site specific.

f. Common Tables of Allowance (CTA) equipment. Equipment authorized by CTA is exempt. Don’t collect usage data on low dollar valued items (e.g., typewriters, desks, fans, etc.).

g. Installed equipment (See glossary). Usage data collection for installed equipment such as generators, and compressors, which are part of a real property facility, is not required.

h. Emergency equipment. Equipment required to be on hand for emergencies, such as generators, compressors, wreckers, ambulances, fire trucks, etc., does not require usage data collection. Retention for such equipment will be based on documented justification.

NOTE: ACTIVITIES ARE RESPONSIBLE FOR DOCUMENTING EQUIPMENT WHICH IS EXEMPTED FROM USAGE REPORTING. A MEMORANDUM FOR RECORD WILL BE KEPT ON FILE FOR THIS PURPOSE.

APPENDIX I

ACRONYMS

ACRC	Area Calibration Repair Center
ADP	Automatic Data Processing
AMDF	Army Master Data File
ANMC	Anticipated Not Mission Capable
AOAP	Army Oil Analysis Program
APL	Approve Parts List
APO	American Post Office
CAPT	Captain
CCI	Controlled Cryptographic Items
CD	Cross Drive
CELD	Corps of Engineers Logistics Directorate
CEIM	Corps of Engineers Information Management Directorate
CNR	Calibration Not Required
COMSEC	Communication Security
CTA	Common Table of Allowance
DA	Department of the Army
DoD	Department of Defense
DIPEC	Defense Industrial Plant Center
DOC NO	Document Number
DODAAC	Department of Defense Activity Address Code
DRMO	Defense Reutilization and Marketing Office

DS	Direct Support
ECC	Equipment Category Code
ECOD	Estimated Cost of Damage
EIC	Equipment Identification Card
EIC	End Item Code
EMCS	Equipment Maintenance Checks and Services
FMC	Full Mission Capable
FIP	Federal Information Processing
FOA	Field Operating Activity
GFE	Government Furnished Equipment
GS	General Support
HQUSACE	Headquarters, U.S. Army Corps of Engineers
IAW	In Accordance With
INOP	Inoperative
MAC	Maintenance Allocation Chart
Maint. Req	Maintenance Request
MC	Maintenance Coordinator
MSC	Major Subordinate Command
MWO	Modification Work Order
NFN	No Fault Noted
NMC	Not Mission Capable
NMCM	Not Mission Capable for Maintenance
NMCS	Not Mission Capable for Supply

NMP	National Maintenance Point
NSN	National Stock Number
OAP	Oil Analysis Program
OCCM	On Condition Cycle Maintenance
OCOC	On Condition Oil Change
OSHA	Occupational Safety and Health Administration
PD	Program Director
PMCS	Preventive Maintenance Check and Services
POL	Petroleum, Oils and Lubricants
PRIP	Plant Replacement Improvement Program
P-VIMS	Project Vehicle Information Management System
QSS	Quick Service Supply
RC	Recoverability Code
RDTE	Research, Development, Test, and Evaluation
SDC	Sample Data Collection
SSSC	Self Service Supply Center
TB	Technical Bulletin
TMDE	Test, Measurement and Diagnostic Equipment
UIC	Unit Identification Code
WARCO	Warranty Control Office
WCA	Warranty Claim Action

APPENDIX J

GLOSSARY

Army Oil Analysis Program
Part of a DOD-wide effort to detect impending equipment and component failures and determine lubricant condition through the evaluation of used oil samples.

Army Oil Analysis Program Feedback
Maintenance and disassembly inspection data regarding an engine or other major assembly furnished by the operating and maintenance activities to the Army Oil Analysis Program Laboratories.

Assembly
A combination of components or modules and parts used as a portion of, and is intended for further installation in an equipment end item (for example, engine, transmission, rotor head, electronic chassis, rack, or cabinet).

Available Days
The days equipment is on hand in an organization and is fully able to do its mission. The time equipment is fully mission capable (FMC).

Before Operation Checks
Checks performed by the operator or crew per -10 TM PMCS tables, in an effort to find faults that will prevent mission performance and therefore, must be corrected prior to starting the mission. When faults are not corrected by the operator or crew, they are reported to unit maintenance (or appropriate repair level) before the mission. Before operation checks should be completed by the operator or crew in 20 minutes or less.

Breakdown Maintenance
Breakdown maintenance is accomplished when a breakdown or failure occurs (See ER 1130-2-500).

Built in Test Equipment
Any identifiable, removable device which is part of an equipment or components under test that is used for the express purpose of testing.

Calibration
Comparison of an instrument (measurement standard or item of test, measurement, and diagnostic equipment) of unverified accuracy with an instrument of known or greater accuracy, to detect and correct an accuracy discrepancy in the unverified instrument.

Component/Module
A combination of parts mounted together in manufacture, which may be tested, replaced as a unit, or repaired (for example, starter, generator, fuel pump, and printed circuit boards). The term module is normally associated with equipment.

Contract Maintenance

Any material maintenance operation performed under contract by commercial organizations (including the original manufacturer of the materiel).

Controlled Exchange
Removal of serviceable parts, components, and assemblies from unserviceable, but economically repairable equipment and their immediate reuse in restoring an item of equipment to a mission capable condition.

Deferred Maintenance
Authorized delay of maintenance or repair of uncorrected faults. Commanders or their designated representatives must authorize delays in correcting a fault. Equipment with deferred maintenance does not meet the maintenance standard.

a. Required maintenance or repair can be deferred only when the fault will not affect the operation of the equipment, or the safety of the operator and (or) passengers.

b. Repair on status symbol “X” deficiencies will not be deferred.

c. Corrections with the required parts available will not normally be deferred. When there are minor corrections for faults which are labor intensive, the repair may be deferred until the next scheduled service.

Deficiency
A fault or problem that causes equipment to malfunction. Faults that make the equipment not mission capable (NMC) are deficiencies.

a. A fault is a deficiency when the fault causes one or more of the following to occur:

(1) Makes an item, subsystem, or system inoperable.

(2) Makes the equipment unsafe or endangers the crew.

(3) Will seriously damage the equipment.

(4) Makes the equipment so inaccurate, that it cannot perform its mission as needed.

b. The “X” status symbol is assigned to a deficiency. All the above situations would carry an “X” symbol.

Diagonal Slash “(/)”
Indicates a materiel defect, other than a deficiency, that must be corrected. The correction increases efficiency or makes the item completely serviceable.

Equipment
Any item that is self-powered, towed or stationary that is designed to perform an operational function.

Equipment in Place
For the purpose of this pamphlet, equipment-in-place is movable TDA, CTA, and CPAD nonexpendable equipment that has been affixed to real property, but that may be removed without destroying or reducing the usefulness of the facility. It does not include installed building equipment. Therefore, unlike installed equipment, equipment-in-place is personal property, is accounted for on property books or DA Form 661 (Record of Equipment in Place) and is programmed for replacement with either investment or expense funds. (AR 735-72, chap 3.)

Fault
A term used to indicate that a piece of equipment has a deficiency or shortcoming.

Floating Plant
Watercraft.

Fully Mission Capable
Systems and equipment that are safe and have all mission-essential subsystems installed and operating within design specifications. The terms ready, available and full mission capable refer to the same status (equipment is on hand and able to perform its missions).

Horizontal Dash "(-)"
Indicates that a required inspection, component replacement, maintenance operation check, or test flight is due, but has not been accomplished, or that an overdue MWO is still outstanding.

Installed Equipment
An item of equipment that is affixed and built into a facility as an integral part. This equipment is necessary to make the facility complete, and if removed, would destroy or reduce the usefulness of the facility. The manner of use for equipment determines if it is integral to the facility. Installed equipment is therefore not included in the TDA, CPAD, or CTA. Then, it follows that TDA, CPAD, and CTA equipment should never become installed property.

Inter-Service Maintenance Support
Maintenance operations performed on a recurring or nonrecurring basis by the organic maintenance capability of one military service or element thereof in support of another military service or element thereof.

Maintainability
An equipment characteristic, due to its design and installation, that gives it the inherent ability to be repaired. The degree of this ability is affected by the operating time it accumulates and the manner in which maintenance is performed on it.

Maintenance Capability
Availability of the resources, facilities, tools, TMDE, drawings, technical publications, trained maintenance personnel, repair parts, and engineering and management support that are necessary in order to perform maintenance operations.

Maintenance Coordinator
An individual responsible for the maintenance of specific items of equipment, and also may be responsible for dispatching the equipment designated for usage tracking.

Maintenance Manager (MM)
An individual responsible for the conduct of maintenance operation at a particular location. The MM is responsible for scheduled and unscheduled maintenance actions and supervises maintenance coordinators in the execution of their duties

Maintenance Officer
An individual responsible for the maintenance management program within a specified activity (i.e., division, district, laboratory, etc.).

Maintenance Operations
The management and physical performance of those actions and tasks involved in servicing, repairing, testing, overhauling, modifying, calibrating, modernizing, and inspecting, materiel in the operational inventory and the provision of technical assistance to the equipment users in support of units of the Army Logistics System.

Materiel
Personal Property.

Materiel Maintenance
The function of sustaining materiel in an operational status, restoring it to a serviceable condition, or updating and upgrading its functional usefulness through modification or other alteration. It includes the subfunctions of maintenance engineering and maintenance operations.

Non-Available Days
The days the equipment was not able to do its mission (the number of days the equipment is not mission capable).

Not Mission Capable (NMC)
A materiel condition indicating that equipment cannot perform any one of its missions. NMC is divided into not mission capable maintenance (NMCM) and not mission capable supply (NMCS).

Not Mission Capable Maintenance
Equipment that cannot perform its mission because of maintenance work underway or needed.

Not Mission Capable Supply
Equipment that cannot perform its mission because of maintenance work stoppage due to shortage of a spare or repair part.

Oil

A liquid lubricant or transfer fluid used in engines, transmissions, and hydraulic systems.

Oil Analysis
A test or series of tests (spectrometric and physical property) that provide an indication of equipment component and oil condition by applying methods of quantitative measurement of wear metals and detection of contaminants in an oil sample.

On-Condition Oil Change
An oil change directed by the AOAP laboratory as a result of findings relative to the condition of the oil and its lubricating capability.

Overhaul
To restore an item to a complete serviceable condition as prescribed by maintenance serviceable standards (normally accomplished at a depot).

Part
An item which cannot normally be disassembled or repaired, or is of such design that disassembly or repair is impractical (bracket, gear, resistors, toggle switches).

Personal Property
Property of any kind except real property and records of the Federal Government.

Possible days
The number of calendar days an item was on hand on the property book during the report period. For an item you received during the reporting period, count the first day it was on hand as a whole possible day. Do not count the last day an item is on hand (the day you lose it from your property book) as a possible day.

Preventive Maintenance
All actions performed in an attempt to retain an item in a specified condition by providing systematic inspection, detection, and prevention of incipient failures.

Preventive Maintenance Checks and Service (PMCS)
Preventive maintenance checks and services are the care, servicing, inspection, detection, and correction of minor faults before these faults cause serious damage, failure, or injury. The procedures and category of maintenance to perform PMCS are found in the -10 and -20 Equipment Technical Manuals and Lubrication Orders.

Program Director Army Program Army Oil Analysis Program
An activity designated by the Department of the Army as the executive agent for management of the Army Oil Analysis Program.

Real Property
Land, facilities, and it's installed personal property when, if removed, impacts the facility's function.

Rebuild
To restore an item to a standard, as nearly as possible, to original or new condition in form, fit, function, and life expectancy. This is done using the maintenance technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable items using original manufacturing tolerances and specifications and then item reassembly.

Repair
The restoration or replacement of parts and (or) units to maintain efficient operating conditions.

Scheduled PMCS
Checks and services performed by activity maintenance personnel with assistance from the operator or crew. They are completed per the PMCS tables in -10 or -20 series TM and lube orders and (or) per manufacturers' manuals. Some equipment also requires scheduled PMCS tasks be performed by Direct Support (DS) personnel per the equipment -30 series TM. All equipment faults are corrected or if above the unit maintenance level authorization to correct (specified in the MAC), job ordered to DS maintenance. Deferred maintenance is completed during the next scheduled service.

Shortcoming
A fault that requires maintenance or supply action on a piece of equipment but does not render the equipment "not mission capable" NMC.

System
A combination of equipment end items, assemblies, major components, and parts assembled as a single functional unit to perform a task or mission.

Test, Measurement, and Diagnostic Equipment
Any system or device used to evaluate a system or equipment's operational condition and to identify and (or) isolate any actual or potential malfunction. TMDE includes diagnostic and prognostic equipment, quality assurance items and calibration, test or measurement equipment. It includes TMDE that is identified as a separate end item or is configured within an end item or system. TMDE also includes manual, semiautomatic and automatic test equipment (with issued software).

Unscheduled Maintenance
Unexpected maintenance that is required because of either equipment or component failure.

Watercraft
Coastal, harbor and inland waterway craft.